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Survival and Adaptation: An Analysis of Dryland Farming in the 1940s and 1950s in Southeast Alberta

by

David John Flower ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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Name of author: David John Flower

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David Flower

David J. Flower
87 Glenhaven Crescent
St. Albert, Alberta
T8N 1A6

18 April 1997
Date

University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Survival and Adaptation: An Analysis of Dryland Farming in the 1940s and 1950s in Southeast Alberta" submitted by David John Flower in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Dr. R. G. Ironside, Supervisor

Dr. O. F. G. Sitwell, Member

Dr. I. A. Campbell, Member

Dr. E. L. Jackson, Member

Dr. P. L. Voisey, Member

John Shaw for J. D. Wood
Dr. J. D. Wood, Member

18 April 1997
Date

Abstract

The droughts of the 1920s and 1930s caused major problems for the dryland farmers in southeast Alberta. Many left the land during these periods. By the 1950s, for those who remained and succeeded in adapting to the conditions, mere survival was no longer a problem. Many had prospered. As a result of government intervention through aid programs, the reestablishment of the Canadian Wheat Board, and new technological and scientific improvements, many of which were hastened by the technological progress precipitated by the war effort, dryland farming changed from being subsistence farming into the beginnings of extensive family farming operations. This historical geographical study examines the reasons for the changes and pays particular attention to those who survived. Through detailed analysis of precipitation statistics and soils; through newspaper and local historical records; and through interviews and surveys the study provides an explanation of the transition of a specific area of dryland farming from the survival of the late 1930s to the development of the 1950s. The principal conclusions of the study are that the dramatic change that took place in the 1940s and 1950s in the dry farming region of southeast Alberta was stimulated by the stabilization of wheat prices, the advance of technology as a result of the war, the development of improved varieties of wheat and the perseverance and determination of the "survivors" to succeed.

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Chapter 1

Introduction

The Macoun–Palliser controversy over the agricultural value of the Palliser Triangle and, in particular, the heart of that triangle, southeast Alberta, was evident on our arrival in Canada in 1966, even though, at the time, we knew nothing about either of the protagonists.

In spring 1966 while still teaching in England, my future wife and I were informed that we had been accepted for teaching positions in Schuler, Alberta, commencing September 1966. We had no idea where Schuler was except that it was near Medicine Hat. One of our colleagues in England was from Toronto and she had an aunt who was the librarian at Ralston, the Canadian military settlement, on the Suffield Experimental Range. She wrote to ask about Schuler. The letter that arrived from Ralston detailed the trip around the 'British Block' and described the Hilda/Schuler area as "dry, dirty, flat" and generally "totally unappealing." In August 1966, one day after our arrival in Canada, we left Medicine Hat to drive out to Schuler. The signpost indicated 35 miles. At about 33 miles north on Highway 41, we crested a rise and saw over to our right a blue lake (we would learn quickly enough it was a 'slough'), three grain elevators, a host of white houses with red and green roofs and fields of green and gold–anything but "dry" or "dirty" or "flat." The Schuler we had imagined in

Manchester as a result of the letter bore no resemblance to the Schuler we saw in August 1966. It was, we were to discover, the difference between the view of Palliser and that of Macoun.

The debate over the productivity of the land has intrigued me ever since. What I saw in 1966 and 1967 was field after field of wheat with yields of 25 and 27 bushels per acre respectively. It seemed that this land was the richest wheat growing land in North America and yet the negative image of Palliser's Triangle still remained even well over one hundred years after it was first described (Francis,1987).

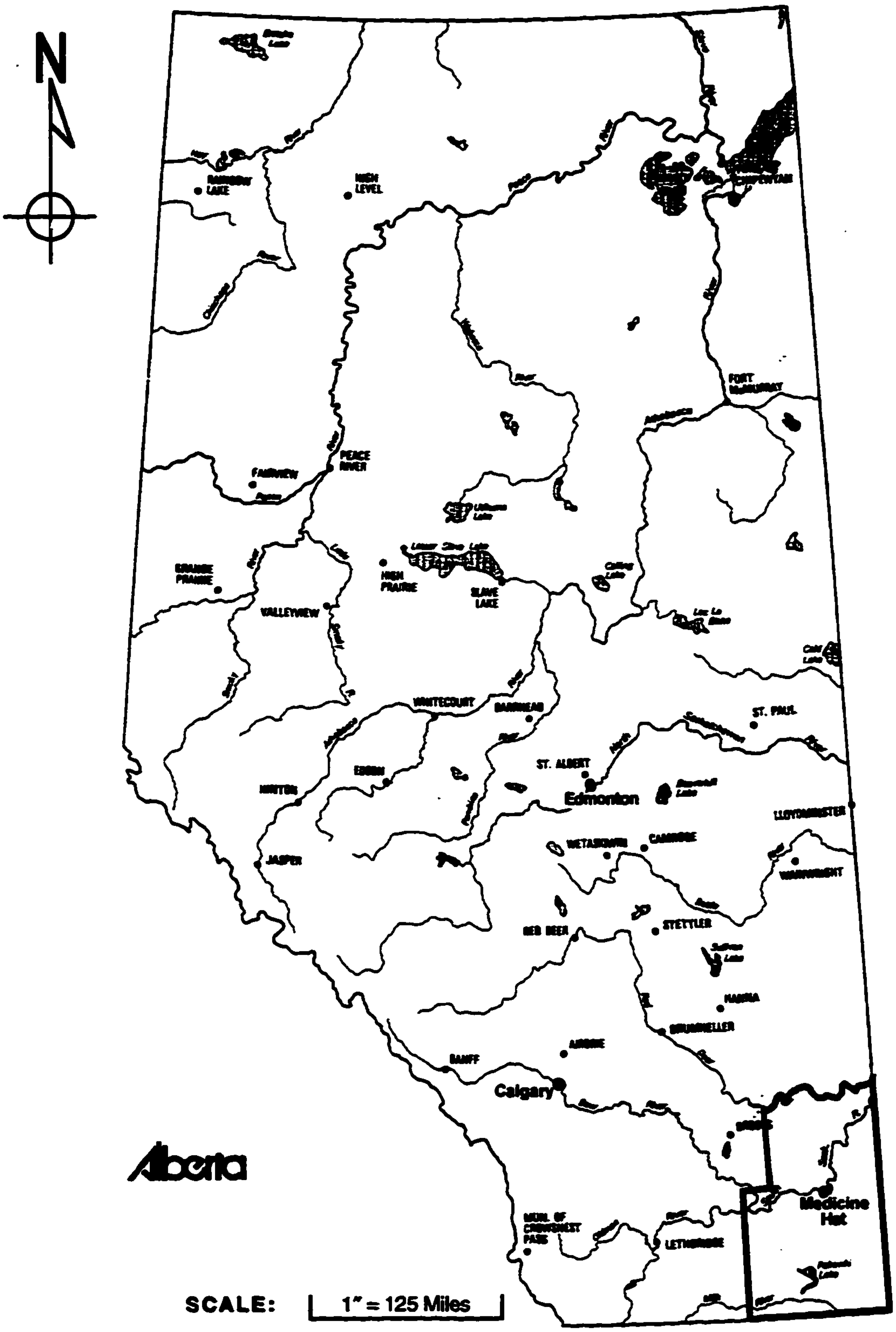
Many economists and historians have shared the view of Palliser, and have suggested that the land in the study area should have been left as range land, for cattle ranching, that it should never have been settled and cultivated by homesteaders. The droughts, subsequent crop failures and significant movement off the land in the 1920s and 1930s provide the evidence, so it is claimed, for that error on the part of the Dominion government. Yet it is that transition from what was recorded as having happened in the dry periods of the 1920s and 1930s to the relative prosperity that was evident by the mid-1960s that needs to be documented and explained because it is a dramatic transition from a virtually uninhabitable dry land to a mechanized, extensive wheat growing countryside.

This thesis attempts to explain how people could live through all that was thrown at them in the 1920s and 1930s in terms of natural and economic disasters and still "survive" and make a life for themselves and their children as dryland farmers in the 1960s. What the thesis aims to show is that the generalizations about this southeast corner of Alberta and the claims that the land should never have been cultivated are just that, generalizations, and that a more detailed study of the area shows that far from simply being sensationalized by the droughts and despair of the 1920s and 1930s, the region developed through the 1940s and on into a solid and prosperous dry farming area.

Malin states that "the only justification for continued scientific research is to discover more adequate descriptions" (1948:iv). Using that rationale it is necessary to look at southeast Alberta (Figure 1) and see whether writing off the land as too risky for cultivation and thereby condemning the whole settlement process as a mistake is a correct interpretation of the events. It is sometimes too easy and too simplistic to dismiss an area as unsuitable for agriculture on the grounds that within the first 40 or 50 years of its settlement people totally foreign to their new environment, who brought totally the wrong tools, failed to adapt. As Gray states "they had to find these things out for themselves" (1967:10). Malin suggests that "had the line of settlement moved slowly through the transition belt into the plains . . . it is possible that the adjustment might have been made without excessive hardship" (1936:118). White goes one stage further in suggesting, almost dispassionately, that those who tried to settle the land and failed were merely "unfortunate sacrifices" in the progression toward the "conquest" of the prairies by the dryland farmers (1985:320).

The purpose of this study is to understand a very specific agricultural community, that of the dryland farmer, during a specific time period, the 1940s and 1950s, within the "man-land" relationship which has been the traditional purview of historical geography. Though it covers only two decades in the sustained settlement of the Canadian plains, those two decades represent one of the most dramatic periods of change in this, the most arid region, of those plains. The study also permits, from those who farmed through the period, the collecting of their memories and their interpretations of that period of change. There is no doubt that the eagerness to settle the subdivided land on homesteads that were too small, with insufficient capital and poor equipment,

Figure 1 Location of the study area



provided a serious obstacle and led to the unfortunate sacrifices so vividly illustrated by writers describing the effects of the droughts of the 1920s and 1930s. Yet there were survivors, and in all but one case of those interviewed or surveyed, they were born and bred in the drylands, taught farming by their parents and neighbours, and later were helped by federal and provincial government aid. Their stories of how and why they stayed and ultimately prospered are the other side of what happened. The transition, that in a little over two decades, from the late 1930s to the very early 1950s, was to change their way of life totally is the real focus of the study. Their stories are neither as tragic, nor as dramatic in many ways as those told during the 1920s and 1930s, but, as Friesen suggests, their determination to confront the depression is both "surprising and even inspiring" (1987:389). Gray calls it "the greatest Canadian success story since the completion of the Canadian Pacific Railway" (1967:vii). But was it simply their faith and their persistence, or was it the result of climatic moderation, of changing agricultural policies, of increased farm size and of adapting agricultural practices that made those who "survived" the successful dryland farmers we were to meet in 1966?

This study then is of the dryland farmers of southeast Alberta. Dryland farming is defined by Webb as "farming where the moisture is insufficient" (1931:367), where the chief factor limiting crop production is moisture supply. The study is not topic specific. It does not look at only soil, climate or farming practices in isolation, but rather, it is a microstudy of an area in a specific time period and an attempt to understand what took place and why. Was it part of an evolving process of adaptation as Cronon suggests and could it be described as the last of the six frontier-to-region processes that he describes as "self-shaping"? (Cronon, Miles, and Gitlin,1992). Cronon describes the six step process from 'species shifting,' the movement of "alien organisms into ecosystems from which they were once absent"; through 'market making', involving the exchange of objects; to 'land taking', where permanent alien settlement turned the land itself into an economic commodity; to 'boundary setting', as a way of newly arrived settlers establishing their space; to 'state forming', the establishment of political authority over an area; to 'self shaping'. It is this last stage that Cronon sees as "a central challenge of regional life right down to the present" where specific groups assert their separateness. This 'self shaping' process may well be applied to the dryland farmers of southeast Alberta.

Were those who survived and continued to farm Worster's "arcadians" or "imperialists"? (1977). Worster's use of these terms described the battle over the use of the land in environmental protection terms, a battle between what he calls "arcadian and imperialist tendencies within the scientific study of nature" . The two sides are easily distinguishable since the arcadians depict "nature as a symbiotic community" while the imperialists seek and praise human dominance of nature.

Was, as Bennett suggests, the environment the dominant factor with which those who settled the land had to learn to live?(1969). In his sociological study of Jasper (the name he used to describe Maple Creek, Saskatchewan), Bennett suggested it took three generations before the land was settled most effectively. The first generation "established the enterprise" in the new land; the second generation "maintained it under conditions of climatic and economic disaster"; and the third generation developed it to its modern stage of efficiency. In discussing these three generations, Bennett rejected pure determinism when he stated, "men do manipulate their environment, they are not merely determined by it" (1969:19).

What caused the transition from survival to development? Was it the result of external forces such as the outbreak of World War II? Was it the broad intervention of the federal and provincial governments with aid for farmers through the Prairie Farm Rehabilitation program or the stabilization of wheat prices? Was it the technological and scientific advances surrounding World War II that changed the method of dryland farming? Or did all these factors come together during the same period, stimulated by war time activities, to change dryland farming permanently? It is these questions which the study attempts to answer, for, by the 1950s set in, most of the important changes had occurred and the good crop years between 1951 and 1958, though causing problems of their own, merely served to consolidate the farming style that was emerging to become known by the 1970s and 1980s as an agribusiness.

The study area lies wholly within the Palliser Triangle (Figure 2), an area so designated as the result of a report presented to the British House of Commons by Captain John Palliser in 1863.[1] The "heart" of the Palliser Triangle (Richards,1968), described climatologically as the semiarid zone, is variously referred to as "the severe drought area" or "the dry prairie belt" (Jones,1986)(Figure 3). It is within this "heart" that the study area is found. It stretches from the boundary with the United States in the south, to the Red Deer River in the north, approximately 130 miles, and from the provincial boundary between Alberta and Saskatchewan in the east to the edge of the irrigation areas in the west, approximately to ranges 11 to 13, a distance of 78 miles (Figure 4). The eastern and southern boundaries of the study area are politically established. Indeed in no sense are they anything but convenient and arbitrary limits to the study. Equally the geographical boundary in the north, the

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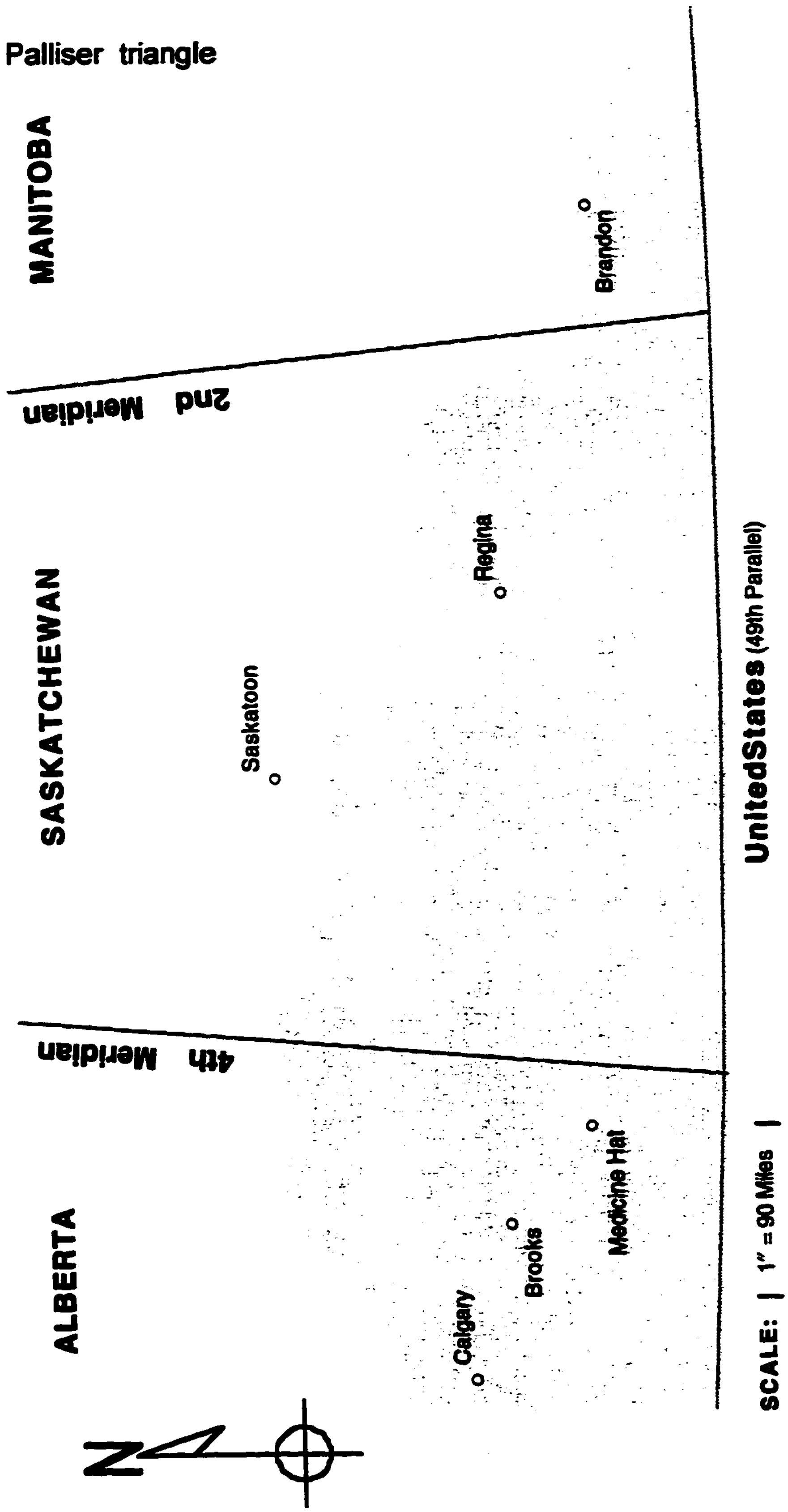
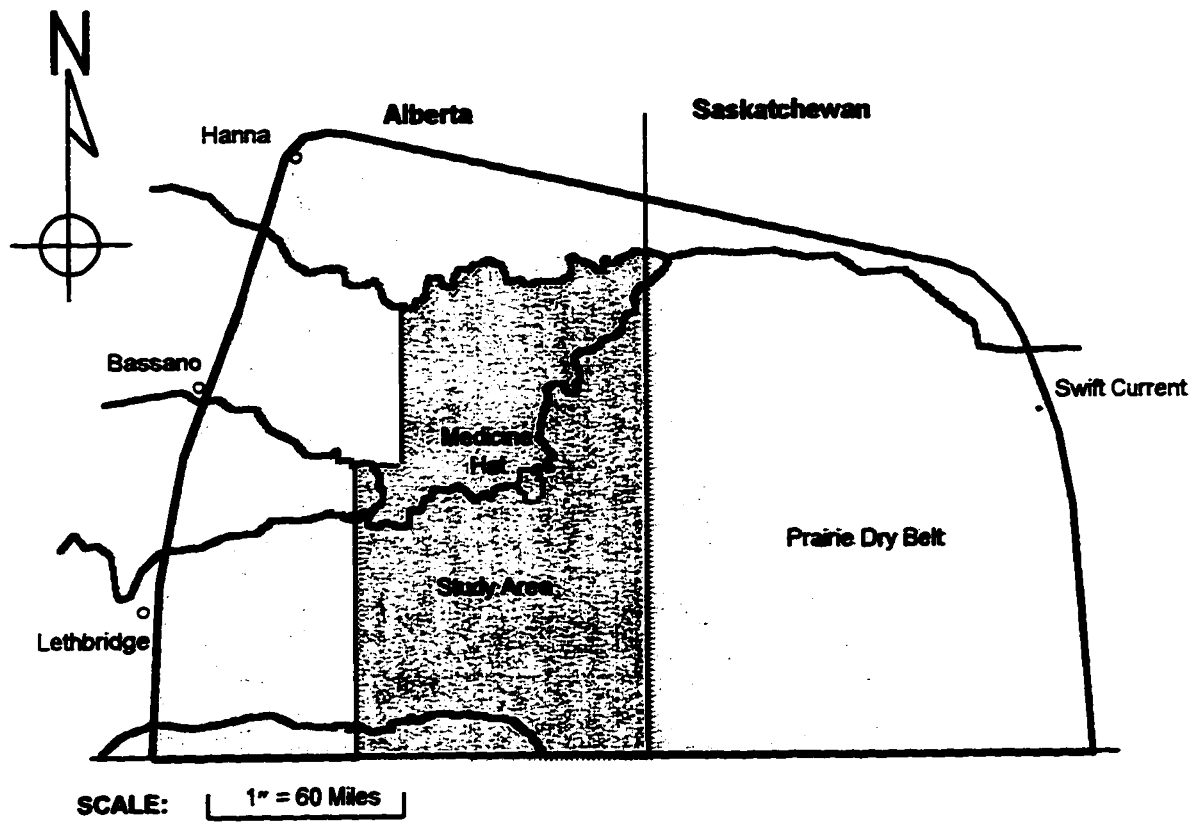
[1]The description of the Palliser Triangle reads "its base on the 49th parallel from a point near Turtle Mountain in Manitoba, westward to a point on the international boundary, near the present point of entry of Carway in Alberta. From Turtle Mountain, the Triangle, which (is) nearly an irregular pentagon, (angles) northwestward through what is now the provinces of Manitoba and Saskatchewan to a point a few miles south of the present city of Saskatoon. From there the line (angles) mostly west by south, crossing the Alberta boundary near the site of the present village of McLaughlin and continuing to a point known as Bow Fort on the Calgary-Banff Highway. From Bow Fort the line (angles) slightly southeastward again until, just east of the foothills, it (cuts) the international boundary at Carway." (Gard,1945:xi)

Figure 2 Palliser triangle



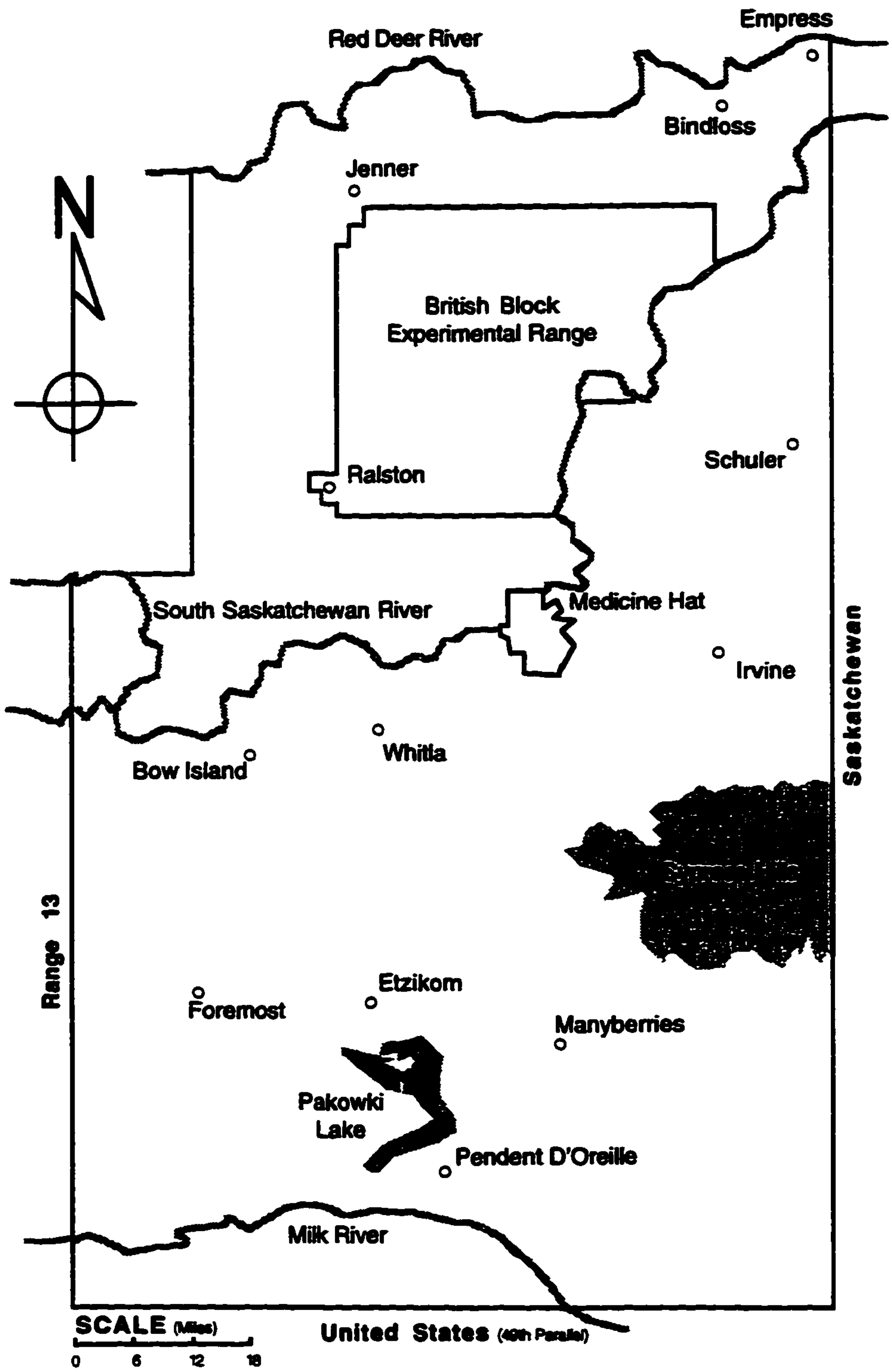
Source: Report of Captain John Palliser 1863 (with maps 1865).

Figure 3 "Heart" of the Palliser Triangle



Source: Jones, D.C. (1986) "We'll all be buried down here", The Prairie Dryland Disaster 1917-1926. (Calgary:Historical Society of Alberta)pxxvii

Figure 4 Map of study area



Red Deer River, is a convenience. North of the Red Deer River lies Special Area #1, so designated in 1938 under The Special Areas Act (Stewart and Porter,1942).[2]

The study will concentrate on the dryland arable farming areas within this region because, while realizing that both irrigation and ranching are adaptive techniques for farmers in such areas of uncertain precipitation, it is the survival and adaptation of the drylanders, those who came to plough the land, that is of specific interest. Ranching had been the first choice for the use of the land in the south of the study area and even though some of the land was cultivated in the first two decades of this century, much around and south of the Cypress Hills, reverted to cattle ranching. The short grass prairie, however, required very large areas of land for cattle grazing, and the need for water and winter forage provided problems. As Waines (1938) suggested, increased wheat prices, newer and hardier varieties of wheat and improved farming techniques made farming on suitable brown soil areas within the study area more feasible. The real driving factor for settlement in the early years was the availability of free land, and that free land, once cultivated, would not be given up by the drylanders without a fight. As for irrigation and its spread east and beyond Medicine Hat, the land proved to be too broken and hilly, there was a shortage of water and the costs were to prove prohibitive (see 7.4.1 Irrigation). Dryland farming was, for much of the area, the obvious agricultural practice if the land were to be cultivated at all.

It will become evident that in the view of many economists and historians, the land south of the Red Deer River could easily have been included in the

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[2]The Act designated as "Special Areas" those areas of the province which "include a considerable amount of land which by reason of insufficient rainfall, inferior quality of soil, and other causes, cannot by the use of ordinary methods of agriculture be made to yield over a period of years produce in sufficient amount to provide the persons farming such land with the means of livelihood" (Alberta Statutes 1938).

category of Special Area, at least from an arable farming standpoint. Thus the northern boundary too could be viewed as artificial. The western boundary of the study area is more indeterminate. North of the South Saskatchewan river, the boundary of the Eastern Irrigation District (EID) determines the westward extension of the dryland farming, limiting it to range 11, west of the 4th meridian. South of the river, however, there is irrigation from the St. Mary's River Irrigation District (SMRID) stretching through Bow Island to Medicine Hat, while in the extreme south the ranching area stretches westward from the Cypress Hills. However, between these irrigation and ranching areas, the dry farming area reaches westward toward Lethbridge and an arbitrary western boundary has been selected as range 13 (Flower,1968)(Figure 5)[3].

Figure 5 represents a picture of the agricultural regions that had emerged in southeast Alberta by the late 1950s. The map itself was drawn in the mid-1960s but the District Agriculturalist was confident that the pattern had not changed very much from the mid-1950s. The areas west of the Cypress Hills (designated simply 'grains'), and an area of wheat cultivation in the extreme north represent significant areas of crop cultivation. The emergence of mixed farming with some cattle, kept as an economic hedge against the inability to sell all the cereal crops, resulted in the suggestion by the District Agriculturalist that a more accurate subdivision would be to class the areas north and east of the British Block as "wheat and cattle areas" and the area southeast of Medicine Hat as "grain and cattle".

The historical context of this geographical study, dealing with the time period up to 1960, dictates the use of the imperial measure as the appropriate measure

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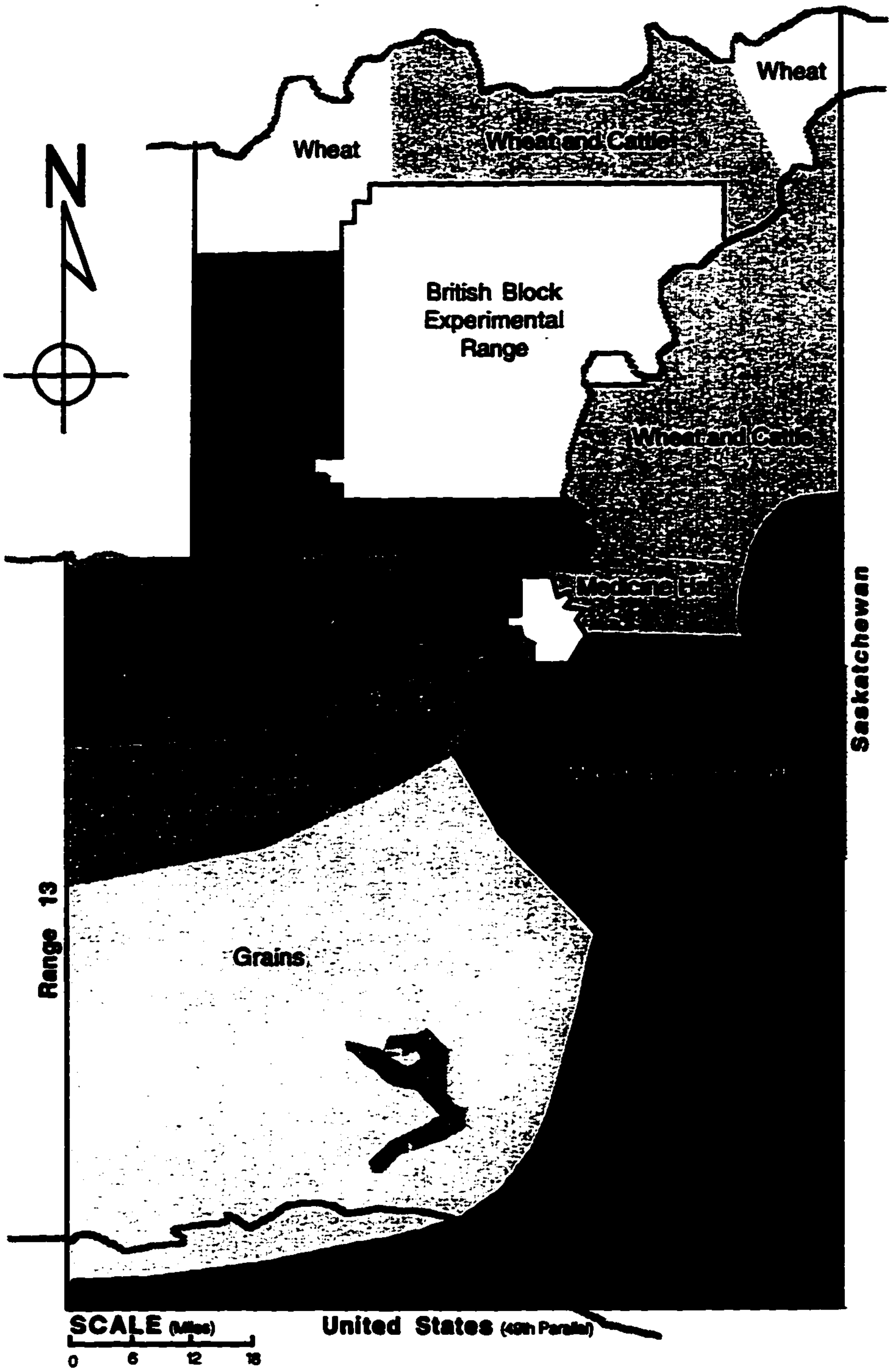
3 "The Atlas of the Medicine Hat Region" was prepared by David Flower for use in some of the elementary schools in Medicine Hat as part of a geography project. The agricultural regions map reproduced in this thesis was compiled by the late Jack Anderson who was the district agriculturalist in the area between the mid-1940s and the mid-1970s. He indicated at the time the map was drawn that there had been very little change in farming patterns since the early 1950s.

Figure 5 Study area with agricultural regions



Source: Flower, D.J. Atlas of the Medicine Hat Region. n.p. 1968.

throughout (Smith,1980:209). Attempting to convert data given in interviews and surveys would not provide an accurate account presented by the respondents and mixing with the metric system of measurement would simply cause confusion.

An additional factor of concern that should be mentioned here occurs as a result of the changes to the federal census divisions between 1951 and 1956, These changes are shown in detail in Chapter 3 but it is important to understand that the significant re-divisioning that took place makes it impossible to compare the statistical material for the two census divisions found from 1931 to 1951 with the new single division created in 1956.

The text is divided into 8 chapters, with this introductory one being the first.

Chapter 2 presents a review of the appropriate literature and specifically points toward the value in such a study of drawing together information from a variety of disciplines in order to provide as accurate a picture as possible of the events of the two decades. The need to put a human face on the transition that occurred suggested the need to adopt a pluralistic approach to the study, the better to understand why and how events happened.

Chapter 3 explains the research methodology. The use of both surveys and interviews provides a wealth of information. However, it must be remembered that much of it is based on questionable memory. Most of the respondents were in their late 60s and the oldest, and perhaps most knowledgeable, most forthcoming and most dogmatic, was in his 90s. It was necessary to use the information collected with caution, to check factual information and in many cases to cross check answers seeking verification from other interviews or from written material. In addition a great deal of factual information came from current farmers whose help in answering questions and providing additional suggestions was unstinting. A significant source of supportive material came from community sponsored local histories and many useful scraps of information pertaining to the transition period being studied were located there (Voisey,1985).

Chapter 4 provides a very traditional but absolutely essential background to the study area. It places southeast Alberta in its physical and human context and provides an understanding of the first 30 or 40 years, depending on when the area was settled, as early as 1905–06 in some areas and as late as 1917–18 in others. The conditions that existed before the transition period must be studied in detail in order to understand how and why the changes made such an impact.

Chapter 5 looks at one obvious variable that could, by itself, have changed the picture significantly, namely the climate. It is necessary to establish whether some significant change in total precipitation, or in annual distribution, occurred in the 1940s and 1950s which might explain in any way the transition from Bennett and Kohl's survival to development (1975). Precipitation is one of the uncontrollable variables which dryland farmers face and the obsession with not just how much precipitation occurs but when was an early lesson I learned. After a significant rainfall in the spring of 1967, well after seeding, a visit to a local farm yielded the following brief discussion:

Visitor: "Well that was a good rainfall! Just what you wanted!"
Farmer: "Yes! But unfortunately it was a day or two too late."

All the farmers surveyed indicated that if the precipitation would just fall at the right time, wheat needed very little moisture to produce a successful crop in the southeast.

Chapter 6 talks about survival, about how and why those who were still farming at the end of the 1930s had managed to stay on the farm. If families around them were moving why did they chose to stay, or was it a matter of choice? Was it simply that they could not afford to leave the land? Despite the original booster advertising by the railroads and the government, the prairie proved not to be a source of instant wealth, rather it rewarded those with persistence, faith and the ability not just to survive but to adjust. This chapter looks at some of the various survival strategies that were used to stay on the land.

Chapter 7 deals with the various adaptations that were so eagerly adopted by the survivors and which were to turn the region into a relatively prosperous grain growing area. These adaptations ranged from significant government involvement through stabilizing wheat prices and establishing legislative aid both practical and financial to scientific improvements with wheat varieties, insecticides and herbicides, to technical improvements with new machinery and equipment. All these adaptations came together as a result of World War II which proved to be the catalyst for change for the dryland farmers of southeast Alberta.

The final chapter, 8, presents an assessment of the two decades and summarizes the transition from survival to "prosperity," while at the same time opening up further research questions on this southeast corner of Alberta that are worthy of study.

Chapter 2

Framework for the Study

2.1 Literature review

2.1.1 Historical geography

The definitive historical geography is "a creation of the present about the past" (Moodie, Lehr, and Alwin,1991:196) and goes far beyond Sauer's belief that simply analyzing geographical processes and detailing their origins and changes are sufficient for a study to be classed as historical geography (Guelke,1982).

Attempts to differentiate history from geography or, more recently, environmental history from historical geography often become a matter more of semantics than of substance. Kant's simplistic statement that "history is narrative; geography is description" (Darby,1991:76) no longer satisfies, and to suggest that there are strict boundaries between the two, each with its own field of study, is equally unsatisfactory. It is true to suggest that history and geography have no subject matter that is mutually exclusive since both work with time and place (Clark,1975). However, Williams suggests that although the space/time, nature/culture nexus should have been the purview of historical geographers, the 1950s, 1960s and 1970s suffered from their "ever-pressing need to find new paradigms and overarching explanations [which] diverted energies and interests away from the basic question of humans in nature" (1994:9). The traditional geographical examination of what used to be called "man-land" relationships was, according to Kates (1987), relegated or denied in favour of the development of geography as a spatial science. It is to that relationship between human activity and the environment that this historical geographical study attempts to return. As Guelke points out, historical geography seeks "to place geographical change in an appropriate historical context" (1982:19). That is what leads me back to a regional overview of the relationship between farmers and their environment and the ways in which they adapted their practices to make their enterprises successful. It is the attempt in this context "to understand and explain the nature of (social) reality" (Eyles, 1988:1). Thus, the historical geographer provides an analysis and then a synthesis of ideas by studying a region over time yet remaining aware of the geographical limitations within which the social picture emerges.

There is a great deal of research in different disciplines on dryland farming in North America, Australia and Argentina, but much of it is topic specific. Studies related to drought and crop failure in southeast Alberta were either conducted in the late 1930s, and related to the drought of that decade, and in the case of Stewart (1937), specifically the economic impact of drought, or were the result of historical studies done in the mid 1980s by Jones with two books detailing the drought of 1917-1926. Jones adopts two different approaches. His earlier book is a compilation of reports from the period. His later one is a description of the "settling and abandoning" of the settlement of Alderson, 35 miles west of Medicine Hat on the CPR line.

There have been studies of drought and relief measures across western Canada also. One of the earliest and most comprehensive, for its time, was the

Stapleford Report, produced in 1939. It looked at rural relief resulting from drought and crop failure. More recent was the work of James Gray (1967) entitled Men Against the Desert which provided a detailed look at the attempts by famers in the drought areas of the Canadian prairies to learn to cope with their environment.

Much has been written about the impact of drought on agriculture and the effect of one upon the other. Environmental historians debated this issue in recent studies on the Dust Bowl in the United States (see 2.1.2 History). Others have looked at the impact of drought on agriculture from a more technical point of view, Rosenburg (1978), while Diggs' more recent study in 1992 looked in great detail at the impact of drought on four North Dakota farms, using case studies to understand the decision making processes surrounding farming in drought-risk areas. The studies of environmental perception, risk and drought by Saarinen (1966) on the Great Plains and by Heathcote (1969) in Australia looked at drought hazard in direct relation to farming.

There has been a great deal written about frontier prairie farming practices, both in the United States and Canada. Some, such as that by Malin (1936), Murchie (1936), Norrie (1977), Rice (1977) and Myers (1990), concentrated particularly on the decade prior to this study. Rice and Myers produced regional studies in Minnesota and eastern Montana concentrating not only on farming but also on the evolution of settlement in the areas. Other studies of agricultural practices prior to the two decades of this study include Malin's study of the adaptation of the agricultural system to the environment in parts of Kansas between 1886 and 1893; Norrie's study of "dry-farming" particularly in relation to the Palliser Triangle between 1870 and 1930; and Murchie's comprehensive study of agricultural progress on the prairie frontier to the early 1930s. All these studies, as well as sections in Dawson's study on pioneering in the prairie provinces (1940) provided the essential background to the two decades of this study.

Fite's work (1977, 1979) gave a broad brush approach to the evolution of dry-farming and associated rural developments on the United States Great Plains, while Riebsame (1994) paid particular attention to the conflicting forces which have sustained dryland farming in such a marginal, referring specifically to a "marginal climate," and risky environment as that found in the dry parts of the Great Plains. Symes (1986) looked especially at the tillage practices that have evolved throughout the period of agricultural settlement within the Palliser Triangle. Shaw and Gilstorf (1954), and Ankli, Helsberg and Thompson (1980) looked at the significance of farm mechanization, more specifically to the emergence of the gasoline tractor, in evolving farming practices between 1890 and 1950. The evolving farm was studied by Conway (1984) who presented, in a sociological study, a Marxist view of the decline of the family farm in Saskatchewan beginning in the early 1950s. Carlyle (1983) looked at types of organizations of farms with particular interest in the development of separated farms in Manitoba. Bennett (1968) presented an anthropological study of the exchange of farm labour, services and goods among and between the various groups he identified in his longitudinal study of southwest Saskatchewan.

Finally, research on the soil itself is significant. Soil surveys of the study area began in 1926 with the Medicine Hat Sheet (Wyatt and Newton); the area to the north, known as the Rainy Hills Sheet, was completed in 1937 (Wyatt, Newton, Bowser and Odynsky); and the area to the south, the Milk River Sheet, in 1941 *(Ibid.)*. These surveys were conducted through the College of Agriculture of the University of Alberta and followed a standard format looking at climate, vegetation, analyzing soil types, and assessing farming practices. Several detailed studies of soils were conducted by staff from the Economics Division of the Canada Department of Agriculture in the 1940s and 1950s. The most significant of these covered the northern half of the study area and was conducted in 1942 by Stewart and Porter. It looked at the land classification and soils of the area designated by the Alberta government as a 'special area'. Most of the others were conducted outside the study area, either in Saskatchewan or in the area of Alberta to the west, in the Lomond/Vulcan area. These studies looked at varying soil types, the dark brown soils (Stutt, 1956) and the brown soils (Biehn, 1952) and analyzed changes in farm organization, size, tenure and land use on the specific soil types. In the same period, Janzen and Korben (1950) were conducting soil moisture studies through the Swift Current Experimental Station in the brown soil zone of southwest Saskatchewan and southeast Alberta. More recent work on soil capability in Alberta (Knight, 1967) and on land quality and land alienation in the United States (Roet, 1985) showing the impact of soil capabilty on land abandonment, pointed to the important role played by marginal, poor and good soils on the settlement patterns of the dryland areas. Some specific soil problems were also studied: Stark (1987) looked at soil salinization, not only in the irrigation areas but also in the dryland areas of southest Alberta as did Bergman (1971) in Chubut, Argentina while Nikolaichuk (1986) and Stark (1987) studied soil erosion, primarily wind erosion in the Canadian prairies.

All these various researchers show an interest in attempting to understand some aspects of dryland farming. But as Harris pointed out,

> if geographers are thought to have a distinctive point of view, then this point of view is characterized by the habit of seeing together the complex of factors that make up the character of places, regions and landscapes; in a word, by accompanied breadth of synthesis. (1991a:153)

Historical geography is still a field to be explored in large measure in Alberta. In 1964, Wood cited R. W. Wink's Foreword to H. A. Innis <u>The Fur Trade in</u>

Canada, 1962 edition, when he stated "historical geography in Alberta, in common with the history of the West, has remained almost uniquely the stamping ground of the amateur, the freelancer, the commercial writer" (1964:17). There has been significant historical work done on Alberta, at both the popular and academic levels, but historical geography, as a distinct discipline in Alberta, is still very much where it was in 1964 when Wood wrote his original comment. Much of the current historical work pre-dates the period in this study and is concerned with the early settlements and pre-European occupation, or with the devastation of the area by the droughts of 1917-1926 and of the 1930s. The classic series Canadian Frontiers of Settlement (9 volumes) edited by W. A. MacKintosh and W. L. G. Joerg provided some significant historical geography, but again, as a study, it pre-dates the time period of this thesis, notwithstanding the fact that it contains much valuable background information. Most of the later historical work has been left to historians and populist writers. Historical geography appears to have been subsumed to a large degree in historical studies and an example of the merger is seen in Voisey's work on Vulcan, a community south of Calgary (1988). Voisey examined "a wide variety of topics grouped around three broad themes: settlement, agriculture and social life" and his completed work was in many ways an historical geography. However, perhaps the difference for the geographer is that it was reported through the eyes of a trained historian. That distinction may, indeed, be very difficult to make but given a specific topic to study, the historical geographer and the environmental historian, although they might well reach the same conclusions, would approach the task from different directions. This thesis will look at a particular time period through the eyes of a geographer rather than those of a historian.

Too often in an attempt to paint a broad picture, geographers and historians have made sweeping assertions about agricultural potential, particularly of the land within the Palliser Triangle. Friesen, for example, comments that "in throwing open to settlement the relatively dry regions of . . . southeast Alberta. . . the Canadian government was taking a great risk" (1987:328). There is considerable division of opinion among surviving farmers with regard to the validity of such a statement. That debate is examined in more detail in Chapter 6. So a more fruitful type of research might well lie within a narrower context. This study is narrower, though not as narrow as Diggs' (1992) study of four North Dakota farms. This study isolates a particular area of the Palliser Triangle and, within that area, defines a specific subgroup of farmers, namely the dryland grain farmers. In that context, it attempts to synthesize and analyze gathered information to assess specific survival and adaptive techniques. The study ties in with Clark's "regional historical studies" (1975:131) though the size of the study area, at least in North American terms, might well make the study a microstudy. It is an attempt to make sense of a particular period, the 1940s and 1950s, and a particular world, that of the dryland farmer of southeast Alberta.

2.1.2 History

According to Fite, "in recent years many historians have increasingly turned their attention to what might be called microhistory" (1981:169). Their aim was to present what he called "a people oriented history" in which small areas were studied in great detail. At the same time, Swierenga was bemoaning the fact that the "new social history" had neglected rural studies; he believed that studying "the development and subsequent histories of these communities is vital" (1981:211). In his view, rural history had become a "mere appendage" of urban history and was perceived as hardly relevant on its own. Swierenga defined "the new rural history as the systematic study of human behaviour over time in the rural environment" (1981:212). He presented four components of his definition of the new rural history, namely, systematic study, human behaviour, what he termed "over time" and, finally, the rural environment. It is within that definition that much of this study fits. He stated that "historians are primarily concerned with change: they study social behavioral change from one generation or historical era to the next" (*Ibid.*:213).

At the same time as Swierenga was appealing for a more structured study of rural history, environmental historians began "providing a much needed balance by underscoring the continued importance of physiographic conditions" (Nash,1991:155). The philosophy of these environmental historians is best expressed by White's statement that "nature does not dictate, but physical nature does, at any given time, set limits on what is humanly possible. Humans may think what they want, they cannot always do what they want, and not all they do turns out as planned" (1985:335). White's remarks bring to mind the environmental determinism-versus-possibilism debate, which represented "the first attempts at generalization by geographers" (Johnston,1991:40). That debate over whether the physical environment controls human actions, or, provides for a range of human actions/responses and thereby gives people a choice was eclipsed for a while by the quantitative revolution (Johnston,1986). However the failure of the quantitative approaches to explain human behaviour, to "show that motives other than economic maximization were held by decision makers" (Golledge, Brown, and Williamson,1972:63) and that understanding those motives was crucial in understanding the relationship between man and the land, led to the emergence of behavioral geography. Put more simply, "the models being propounded and tested [by positivists] were not a very good description of reality" (Johnston,1991:137). That reality is made up of complex interdependencies, and it is that reality that is sought in environmental history. This study is, thus, a holistic study demanding cooperation from other disciplines and studying, as Nash suggests, "the past contact of man with his total habitat" (Williams,1994:4).

Recent examples of environmental histories generate an interesting debate on the relationship between human enterprise and the environment. In an assessment of three books on the Dust Bowl in the United States, McDean (1986) shows that they blame its emergence not on drought and wind but on human actions and government policies. Bonnifield (1979), for example, maintains that many of the settlers could have stayed on the land in the 1930s and survived by adapting to the new conditions. They were, he claims, driven off the land not by drought but by deliberate government policy aimed at returning the land to grazing under government control. Worster (1979), on the other hand, argues that the capitalist culture in the United States was determined to dominate and exploit the land and that this philosophy was exacerbated by the federal government's unwillingness to place any restraints on capitalist farmers. Finally, Hurt (1981) blames the Dust Bowl on new agricultural techniques though he is careful to assign the blame not just on human farming of the land but also on the soils of the region. He claims that by the 1950s, the farmers understood very well the importance of soil conservation in successful farming of such marginal areas.

These three Dust Bowl studies illustrate the work of the environmental historians and relate specifically to the concept of survival in southeast Alberta where farmers survived the drought and depression through the 1930s by staying on the land and "making do." They also illustrate the value of synthesis in modern social science research. The use of other methodologies and material from other disciplines helps to provide a fuller explanation of an event, a period or a region. As Harris suggests, "our larger problems transcend narrow subject matter fields" (1991a:162).

Voisey summarizes synthesis by suggesting that "there is nothing rigid about the sub-categories of history, they are merely convenient labels and the best history often defies classification" (1985:332). Indeed, he suggests that perhaps synthesis or, as Worster calls it, "a clustering of ideas" (1984:16) might lead to a study being deemed geographical or even social scientific. Synthesis was promoted as an important field of activity for historians by Malin in his study of the grassland region of North America (1948:326). Malin chose to study the complete history of a region "by drawing upon knowledge from all relevant academic disciplines" (Swierenga,1986:13). Unfortunately, Williams suggests, Malin suffered along with Webb for being ahead of his time, for being outside the intellectual milieu and for being classed as a "determinist dabbler" (1994:7). However, Malin's attempts to break down the interdisciplinary barriers make him an important advocate for those currently promoting synthesis. Swierenga himself refers to this "interdisciplinary approach" that analyzes rural life over time as providing "an integrating theme for understanding the evolution of any nation" (1981:220).

Similar changes have occurred in Canadian history. Berger cites the editors of the Canadian Historical Review in 1977 as stating that "the last ten years have witnessed a revolution in historical writing in Canada" (1986:319). He contends that historical study has taken on "an unprecedented complexity and pluralism" in which it draws from political science, historical geography, anthropology and the social sciences. The melding of methodologies and ideas from all these previously disparate studies produces a synthesis that may well provide a more complete historical picture than provided by each discipline in isolation.

In commenting specifically on historical methodology, Voisey states that "bickering between quantifiers and traditionalists is no longer healthy--history is a difficult craft and it must be attacked with any and all weapons that promise to defeat the problem at hand" (1985:333). The same can be said of historical geography. The importance of synthesis, "of viewing holistically the complex of factors" (Baker,1991:219), according to some the central task of geography, is basic to modern historical geographical research (Mitchell,1954; Holt-Jensen,1980; Harris,1989; Harris,1991a). It is no longer legitimate for the historical geographer to attempt to separate history as the study of time (chronology) and geography as the study of space (chorology) because in studying evolving human relationships with the landscape, historical geographers can provide a distinct view of a region to complement that of the historian (Harris,1991b). Meinig sums up the relationship between history and geography by stating that they "are rooted in the basic stuff of human existence" and that "as fields of study they are analogous, complementary, and interdependent" (1978:1186).

2.1.3 Grassland

Throughout the exploration and colonization of the western plains, Malin's grasslands (1948), the perception of their agricultural potential has varied from desert to garden and back again (Bennett,1990). The debate involving the Canadian prairies and, in particular, the Palliser Triangle paralleled that in the United States. Indeed, the Canadian prairies were considered by many writers to be simply an extension of the American Great Plains, and thus, Blodget's great American desert naturally spilled over into Canada (1857). This idea of a "north-south continuity of physical features" continues to exist, particularly in the driest sections of the Canadian prairies (Warkentin,1975:149). As a result, many of the early assessments of the Great Plains, such as those of Webb (1931) and Malin (1948), have relevance to the Canadian scene.

Warkentin (1973) detailed much of the early description of the land in the Canadian prairies and pointed out that it was only when the question of colonizing Rupert's Land arose in the 1850s that a "scientific" assessment of the agricultural/settlement potential of the land, an active resource appraisal, was undertaken. The reports from Palliser's expeditions established that "the area of bad land in the North West was . . . the northern limit of the great arid region" (Owram,1980:68). The attacks on Palliser's findings by Dawson and Macoun, who claimed that what had been classed as desert was really a potential garden awaiting appropriate settlement and development, were in the ascendancy by the 1890s (Bennett,1990). The belief was that encouraging the migration of farmers from humid areas of eastern Canada and from Europe was all that was needed to cultivate the "garden." However, as well as encouraging immigrants who "misunderstood the unfamiliar semiarid environment [and] lacked knowledge of the unpredictable cycles of wet and dry years" (Roet,1985:174), the government imposed a "concept of fixed land tenure . . . [which] violated microhabitat variability" (Bennett,1963:2). The continuation of this debate over the suitability of the land for farming was driven by the dry spells of the 1920s and 1930s and led to the belief by some authors that certain settled areas would have been better left as the domain of the cattle rancher (Waines,1938; Kollmorgen,1969; Friesen,1987). Warkentin, in contrast, suggested that arid conditions were a reality for those living on the plains but that they were nonetheless a "proven area for settlement" as long as an awareness of the hazard for arable farming remained (1975:161). Francis summed up the debate by stating that "the negative image of 'Palliser's Triangle' . . . still remains one hundred and twenty five years later" (1987:181).

2.1.4 Adaptation and survival

According to Kloberdanz, adaptation denotes a process whereby a population alters itself or its relationship to its habitat in order to make that milieu "a more fit place in which to live" (1980:54). The adaptation of the immigrant "European forest-culture people to the treeless grassland environment" was, according to Swierenga's attempt to define Malin's central thesis, slow and disorganized and only succeeded because of the "ingenuity and resourcefulness of individual settlers" (1984:xix). The early failure to settle the land was not only "a failure to people, it was a failure to adapt" (Morton,1985:25). The "grassland environment" forced adjustments and adaptations; otherwise, the farmers simply would not have survived (Swierenga,1986:14). However, it becomes an intriguing question whether that adaptation was molded by the landscape and the climate or whether the changes were aggressively driven by the desire to thrive and prosper. For example, Rees (1988), like Bennett (1969), differentiated between the attitude of the farmer and that of the rancher toward the land. Both claimed that the farmer wanted "to tame" the virgin prairie by proving that it could be cultivated whereas the rancher, knowing the land was already productive, simply wanted to learn how to manage it effectively. These same views were depicted by Worster (1977) when he talked about "the arcadians," who believed in the symbiotic relationship between man and nature, and "the imperialists," who believed that nature should be subjected to human dominance. This conflict over whether nature had "disciplined and shaped" those who settled the land or whether, in their determination to survive, the settlers simply exploited the land continues. Luebke (1984) maintained that the environmental base did not determine the culture of a region because the people settling that region brought with them their own cultural and historical experiences.

Others viewed it differently. Malin, rather than accepting either end of the continuum, saw the adaptation as a evolving process, (White,1985); it was an ecological dialectic in Wittfogel's mind (Worster,1984) or perhaps even a self-shaping process (Cronon, Miles, and Gitlin,1992). Malin maintained that the agricultural adjustments were forced upon the settlers by the grassland environment (Swierenga,1986) but that every ecologic region was "complete in itself, a relatively stabilized product of nature" that contained all the necessary resources for human occupancy (Swierenga,1984:x). Humans had to learn to live within, and adapt to, the parameters set by the physical environment, and as long as that physical environment was the "principal determinant of human behaviour," little attention was paid to the cultural background of the settlers

(Luebke,1984:24). Bennett referred to this acceptance of the dominance of the physical environment as "adaptive behaviour," allowing humans to cope with people and resources in order to attain goals and solve problems (1969:11), the mark, according to White, of "the utilitarians" (1985:311).

Malin saw the whole process of adaptation as cyclical, with certain dependent variables intervening to initiate a new cycle in what he called "the indeterminate process of readjustment" (1948:324). Survival, after all, was not only the result of the "open-ended, perpetual process of readjustment" (Swierenga,1984:xx), but also the result, like adaptation, of necessity. As Cronon pointed out, it was no longer possible simply to exhaust the soil and then move on (1992:40) because nowhere else would provide the same opportunity to secure free or cheap land. The frontier lands were all full. If the dream were to be realized, it would be necessary to stay put and adapt in order to survive and thus participate in the last of the six frontier-to-region processes[4] referred to as "self-shaping," the process which gives a region a special cultural identity (Cronon, Miles, and Gitlin,1992:22). Perhaps it is just too simplistic to dismiss an area as unsuitable for agriculture on the grounds that within the first 40 years or so, people foreign to the environment failed to adapt. The land may be made to work through persistence, faith and appropriate adjustments. Malin suggested that had the line of settlement moved more slowly through the prairies, the adjustment may well have been made without excessive hardship. In the short term, it was the railroad that "carried the rate of settlement much faster than the settlers could adapt the agricultural system to the new habitat" (1936:118). In

[4] "In contrast to Turner's frontier school, a new approach to this history [of the West] is likely to stress the connectedness of frontier areas more than their isolation. Western history makes sense only when we see the complex linkages that tied frontier areas to other parts of the world . . . . The six frontier-to-region processes that the authors describe are "species shifting, market making, land taking, boundary settling, state farming, and self-shaping . . . [a]ll these suggest the success of the old world invasion in producing similar results in all parts of the continent." (Cronon, Miles, and Gitlin,1992:3–27).

the long term however, the railroad became essential for successful marketing of settlers' farm products.

Much of the research related to an attempt to understand and explain the behaviour of the dryland pioneers centred on the work of Saarinen in the United States and Heathcote in Australia. Both were particularly interested in the impact of drought in high-risk dryfarming areas and what intrigued both was why farmers in these areas "constantly underestimated the frequency of drought". According to these researchers into environmental hazards, the only way to provide an understanding that would be helpful in planning, was to study the decision making of the inhabitants of those areas (Johnston:1991). What was needed was a mechanism for understanding human response to environmental hazard, in this case, drought. Saarinen's work on drought hazard in the Great Plains studied the farmers' reactions in order to understand what future steps might be taken to reduce substantially the potential effects. Heathcote's work concentrated on human adjustment to agricultural drought in South Australia(1972:1074). It was aimed at testing a number of hypotheses on drought perception, adjustments to drought conditions and adaptations to drought. The work of both researchers was a pioneer attempt to understand human behaviour in the face of known environmental hazards.

2.1.5 Climate and drought

According to Fite (1979), much of the history of the Great Plains could be written around the uncertain, undependable and even destructive weather of the region. Nothing in the region, he claimed, had so dominated life as rain or lack of it. That is certainly the case in southeast Alberta, and raises the issue of climatic determinism and whether climate controls the cause of human action.

Those dryland farmers who persisted and survived might well claim that despite all the adaptations and innovations, they were still very much at the mercy of the climate.

The average annual precipitation for the city of Medicine Hat between 1890 and 1988 was 13.57 inches, with a variation of between six inches and 26 inches. Medicine Hat is approximately at the centre of the study area and, while I will assess regional variations in precipitation patterns in a subsequent chapter, this average annual figure indicates that the area lies well within what is classed as the semiarid zone. Climatically, the mid-continental, semiarid region is subject to wide shifts in precipitation. The saving grace agriculturally, as Norrie pointed out, is that the periods of maximum precipitation tend to coincide with the moisture requirements of the growing crops, with between 75.0 percent and 80.0 percent of the precipitation occurring either in the previous fall or in the actual growing season (Bowser,1942; Norrie,1977). Drought is an inevitable and recurring feature of that climate as it is of the Great Plains in general and thus must be reckoned as the principal natural hazard (Bark,1978; Hewes,1979). There is no single definition for drought since the economic impact of an extended period of time with inadequate precipitation can vary widely. Thus, drought means different things to different people (Heathcote,1969).

As a meteorological phenomenon, drought implies an extended period of moisture deficiency usually lasting at least a year and on rare occasions for a number of years (Felch,1978). In this spirit, the American Meteorological Society defined drought as "a period of abnormally dry weather sufficiently prolonged for lack of water to cause serious hydrologic imbalance in the affected area" (Huschke,1959). In summarizing a variety of definitions provided by Yevjevich, da Costa and Vlachos, Ripley (1988:1) came up with four simple ones:

(1) meteorological drought–unusually low precipitation over a large area for a prolonged period;
(2) hydrological drought–unusually low surface-water and ground-water levels over a large area;
(3) agricultural drought–unusually low soil moisture levels over a large area for a prolonged period;
(4) socio-economic drought–an unusual shortage of water that produces an adverse effect on society and the economy.

However, as Chakravarti pointed out, since there is no internationally accepted definition of drought, and since the moisture needed for farming in the Prairies depends on precipitation, precipitation is perhaps the best indicator of drought (Gibbs and Maher,1967; Chakravarti,1976). What is true in general is true in Alberta where there is no official definition of drought, such a designation for an area of the province being largely political and depending on a decision by the legislature (Dzikowski,1992).

Despite this broad lack of consensus, in an attempt to find a uniform, objective measure for describing abnormally wet or dry weather, an American, W. C. Palmer devised an index, formally known as the Palmer Drought Index (PDI). The index is widely accepted because it takes into account the normal weather for each area, and it has proven both stable and reliable (Felch,1978). Unfortunately, a significant period of unbroken weather records is required for the calculation to be effective. Thus, in the study area, the only data set and locations where it can be applied are to the climatic information for Medicine Hat and Manyberries.

Warrick and Bowden suggested that there was a clockwise regularity to major droughts. Using tree-ring analysis, they suggested a 22-year rhythm of drought in the United States dating back to the year 1600. Such a belief, supported, according to a survey conducted by the U.S. National Defense Department in 1978, by 17 climatic experts, might cause interest in the "lessening" hypothesis. This hypothesis proposed that since the time of agricultural settlement of the grasslands and the gradual adaptation of farming practice to the environment, the impact of the droughts on the Great Plains had become less pronounced. It was, after all, the impact of the drought conditions on the farmers and on their regions that was as important to historical geographers and environmental historians as the physical cause of the droughts themselves (Cronon,1992).

2.1.6 Methodology

Many social scientists support the belief that the two methodologies, namely idiographic and nomothetic, can work together and enhance research. There is still, however, a significant dichotomy between the purists in both camps. This dichotomy occurs also in the debate over methodology in historical geography. Baker, for example, saw a basic need "for a change of attitude towards historical data, for the replacement whenever possible of impressionable surveys of data by appropriate quantitative techniques" (1972:20). Billinge, on the other hand, proposed that "there are non-quantifiable sources which deserve and demand our attention, and . . . a subjective viewpoint is not necessarily illegitimate" (1991:255).

It is evident that many researchers still see the two methodologies as incompatible since "they are based on paradigms that make different assumptions about the world and what constitutes valid research" (Firestone,1987:16). If, as both Filstead (1979) and Smith (1983) suggest, these methodologies were not just differences between research strategies and data collection procedures but indeed lay at the heart of the classic argument in philosophy between the schools of realism and idealism, then they did compete as research methodologies. Thus, the choice of either one must depend upon not only the subject matter but also the boundaries within which researchers structure their inquiry (Rist,1977).

Both methodologies have strengths and weaknesses (Hara,1995) but if they do exist independently of each other, each with its own internal order and logic, then each will continue to prosper. The question is can the theoretical and practical measures in qualitative research be integrated with quantitative approaches? Some have claimed that compatibility and cooperation are impossible (Smith and Heshusius,1986); others believe that integrated, holistic approaches are indeed valid (Ianni and Orr,1979). Proposals for complementarity went beyond earlier ideas that qualitative research simply provided the picture, which was then analyzed by quantitative methods or was used only to enliven a statistical report. Neither methodology could be subordinate to the other. Freeman claimed that geography belonged neither to the natural sciences nor to the social sciences:

> there is an element of disillusion with quantification. Hopes that it could provide all the answers to human problems have proved to be vain, though this does not mean it was a futile exercise but rather that man's life is so infinitely complex that geographers must be aware of all human study, including psychology (1980:198).

The two methodologies are "dialectically united by the very existence and work of the human geographer," who is torn between two contradictory and yet complementary views, "commitment to a society and commitment to the objectivity of scientific knowledge" (Hasson,1984:17).

Attempts at combining the two research methodologies are referred to in the social sciences as convergence or triangulation and are evident in what Eyles refers to as "interpretative geography" (1988:1). In presenting the idea of triangulation, Jick (1979) pointed out that researchers could improve the accuracy of their judgment by collecting different kinds of data on the same phenomena. He saw triangulation as providing several major opportunities by (1) allowing researchers to be more confident of their results, (2) stimulating the creation of inventive new ways of seeing and understanding a problem, (3) helping to uncover elements that do not fit the model so that old theories can be refashioned and new theories developed, (4) leading to the integration of theories, and (5) serving as a critical test for competing theories.

The use of convergence or triangulation is not appropriate for all research. However, when applied, it can generate holistic research with great density of information, enhanced vividness and clarity of meaning. As Rossman and Wilson suggested, "numbers (quantitative) and words (qualitative) can be used together in a variety of ways to produce richer and more insightful analyses of complex phenomena than can be achieved by either one alone" (1985:641). It is possible to accept a pluralistic approach, ensuring, as Papageorgiou (1982) suggested, that "the intuition gained . . . will, somehow, improve my modelling." However, although such an approach has been accepted in the social sciences where qualitative research is an acceptable methodology, it has taken much longer to find acceptance in geography. Buttimer claimed that "it is time we discovered that humanistic and scientific enquiry are not inevitably opposed, we need to find their appropriate roles in the exploration of human experience" (1976:290). On the other hand, Johnston stated that "the two have little in common, and are competing for central positions as the philosophy of human geography" (1991:187). That the answer lies in a pluralistic approach to research seems most logical. Spate quoted Julian Huxley as saying that "one of the great needs of our time is to discover the means of coping with quality and value; after all our most important experiences are qualitative, and when everything has been reduced to mathematics, something essential has evaporated from reality" (1960[a]:391). Human geography is, after all, both a humanistically committed undertaking and a scientifically committed endeavour. It is not just an "explaining science," and as such, it must apply appropriate methodologies to produce the most holistic results in studying people's relationship with place (Hasson,1984). As Voisey pointed out, "bickering between quantifiers and traditionalists [in history] is no longer healthy" (1985:333). Perhaps the final word should go to Spate when he reminded geographers that "statistics are at best but half of life. The other half is understanding and imaginative interpretation" (1960[b]:facing page 1).

In an attempt to understand how dryland farmers in southeast Alberta adapted their farming practices and thereby survived the 1940s and 1950s, this study will adopt a pluralistic approach using a mixture of qualitative and quantitative research methods. The quantitative base will be overlaid by qualitative research to place a strong human dimension on the interpretation of what happened during the two decades.

Chapter 3

Research Methodology

3.1 Methods

The essence of this study is qualitatively based. It is centred on a farming population which, at least in part, survived difficult climatic and economic conditions and adapted a farming style to handle climatic uncertainty. However, the study has to be underscored by quantitative research. It is a blend of these two approaches, a methodological convergence, that will provide a comprehensive study of the complex world of the dryland farmer during the 1940s and 1950s. It is this "between-method" strategy called "elaboration" by Rossman and Wilson (1985) involving qualitative data enriching quantitative data, and vice versa, that provides a greater depth of understanding. Eyles proposes that "one way in which the researcher can try to get to grips with the complexity of the social order is by adopting a multiple research strategy" (1988:4).

Multiple methods of data collection, advocated and practised by early anthropologists such as Malinowski, and what Ward refers to as "pluralistic methodologies," (1991:203), were used in order to provide as accurate a picture of adaptation and survival as possible. Bennett proposes this methodology in his book The Northern Plainsmen (1969:4). There he supports the need to use a variety of data collecting instruments and approaches to provide a comprehensive study. Five of the instruments listed by Bennett have been used in this study. They are survey analysis and in depth interviewing, documentary and statistical analysis, media analysis and "the full use of local people as participants and advisors" (Bennett and Kohl,1981:92). This methodology seemed particularly applicable to this study because of my personal connections with the area. The pluralistic approach, that is using numbers and words, will provide a much richer, more insightful and more comprehensive analysis and interpretation of the phenomena of survival and adaptation than would be possible by using either method in isolation (Rossman and Wilson,1985).

3.2 The research population

Two separate groups of individuals provided much of the stimulus for the study. The first involved a group of individuals who knew the whole area intimately. They were the former director of the Medicine Hat Regional Planning Commission, the former manager of Improvement District #1 and the District Agriculturalist. All three were consulted over time and it was the District Agriculturalist who, in 1969 assisted me to produce, for elementary student use, an unpublished atlas of Southeast Alberta. The second group involved a number of farmers and their wives who farmed in the Schuler area. Several evenings of discussion took place with these people who had been born and raised in the Schuler area and whose parents had been homesteaders there. When the study was initiated, the most difficult task was to find farmers who remembered the two decades involved in the study, the period from 1940 to 1960. My assumptions were that almost all would have retired from farming and that on retirement they may well have left the district. Neither of these assumptions proved correct. Though in their seventies and eighties, many still continued to help out on the family farm whenever possible and especially at seeding and harvesting times. Some still owned land and leased it out to younger relatives or neighbours, but all still took a significant interest in farming practices. Most stayed in the area when they retired. Moving in most cases either to Medicine Hat or to one of the smaller communities, few left the district entirely, although there were some who retired in Calgary. Most felt such an attachment to place, to the "open prairie", that they found it very difficult to live outside the area. One described his stay in the mountains of British Columbia as claustrophobic and could not wait to return to the "high sky" of the prairies.

A great deal of initial assistance in finding farmers who might be prepared to respond to the questionnaire came from a retired teacher, Helen Carroll, who now lives in Oyen. She was born and raised in the area nine miles south of Bindloss. Her research provided the names and addresses of a number of farmers from that area, namely west of the South Saskatchewan River and across the north side of the Suffield Experimental Station (known locally as the British Block). Letters were also placed in local papers asking for assistance, including the Medicine Hat News, the 40 Mile County Commentator and Cypress Courier, and the local seniors' newspaper The Golden Gazette, published in Medicine Hat. Disappointingly only a few leads came from these sources. Part of the problem, it was pointed out clearly in a later interview, was that (a) too many of the older residents did not believe they were sufficiently familiar with the English language to respond to questionnaires; (b) an equal number simply did not like filling out surveys; (c) for many it was an unwarranted intrusion into their past; and (d) many did not trust where the collected information might end up (Willis,1980:66). It was much easier for individuals to be interviewed personally so that they could just talk, though even then there was some reluctance about a taped interview. On more than one occasion an interview was interrupted by a spouse suggesting that names should not be mentioned, or stories should not be told, for fear that the information might somehow become public. What the interviews elicited, however, apart from the specific facts, was the 'mentality' of the people, a significant factor in discussing survival and adaptation strategies (Eyles,1988). The conversations that wove themselves around the questions served to provide "insights into how people felt about what happened" rather than just "what happened" (Allen and Montell,1981:21).

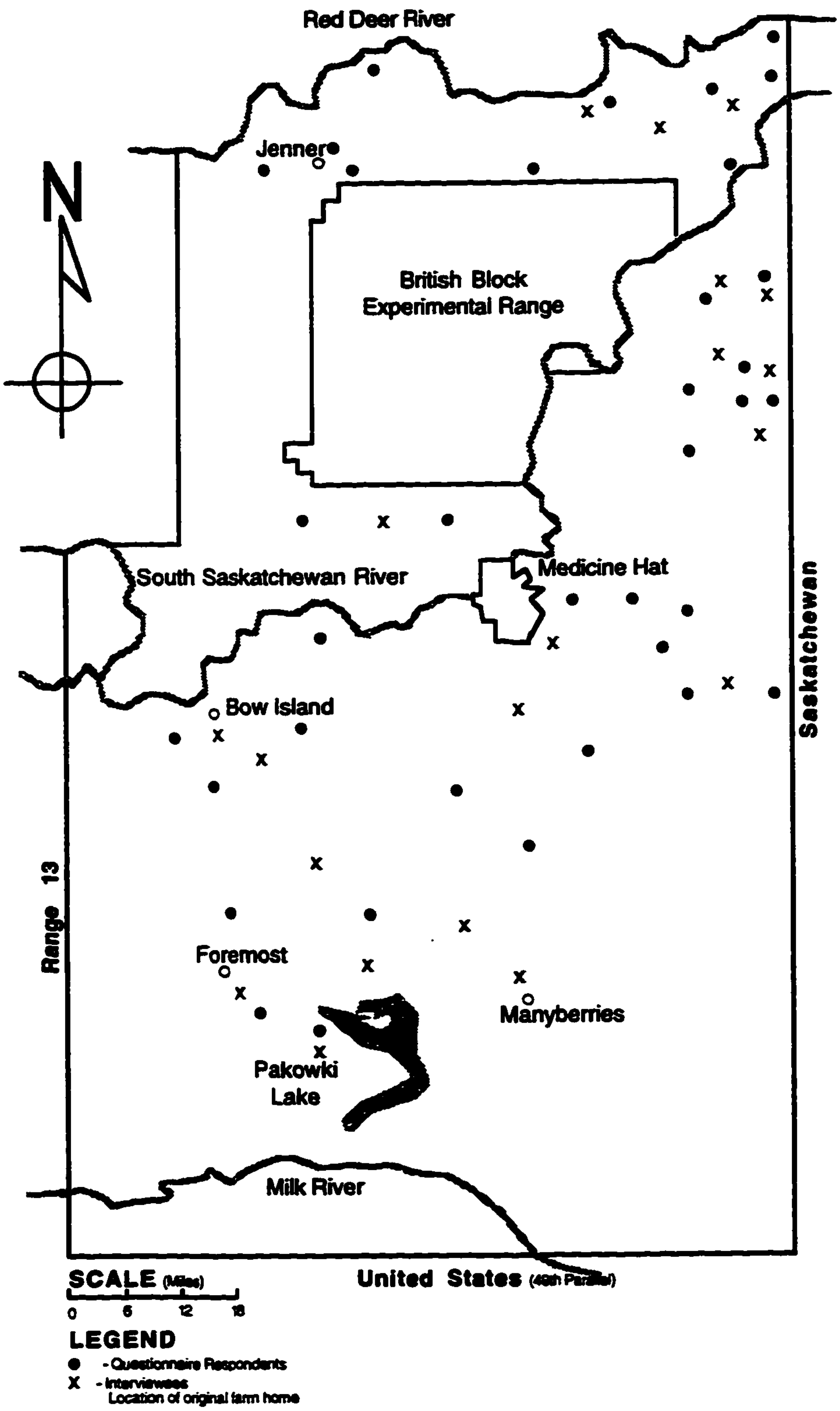
Finally it was very important to ensure that when the questionnaires and interviews had been collected there had been reasonable coverage over the whole study area, Figure 6 shows the distribution of both methods of information collection.

3.3 Survey analysis and in-depth interviewing

3.3.1 The questionnaire

The self-administered questionnaire (Appendix A) was the simplest method of gathering information. A very detailed and long questionnaire was developed. The questions that were asked were a mixture of fact and opinion in the hope of stimulating the respondent's interest. The questionnaire was pre-tested by sending it to seven individuals. Four were farmers chosen as representative of the individuals to whom the final document would be sent and the other three were long time provincial employees based in Medicine Hat but serving the surrounding rural areas and selected because of their detailed knowledge of the area. Several of the questions were modified as a result of comments received and one of the pre-testers did raise a concern that was to reoccur later. After completing the questionnaire and suggesting a few changes, he suggested that perhaps too much detail was being requested since many people would not remember that amount of detail 30 to 50 years ago. His comment was

Figure 6 Interviews and surveys



> I found it hard to put myself into the shoes of my dad to answer the questions. I think that may be the single most difficult part of the paper. Maybe you should ask the question "do you, as a son or grandson, have access to information vital to these questions and will you place yourself in the position of that farmer in 1940 and 1950?" (Beck,1992)

There is no doubt that in a number of cases individuals who had agreed to complete the questionnaire decided not to do so when it was mailed to them either because of its length or because of the amount of detail being sought. Several respondents assumed that the request was for anecdotal, local historical research and did not feel comfortable answering the kinds of questions that were in the questionnaire. Nonetheless in several cases there were family gatherings of parents and children, many of the latter now farmers in their own right, answering questionnaires together and drawing on one another's memories.

The questionnaire consisted of an introductory letter explaining the reasons behind the research followed by a very brief series of historical questions relating to family origin and date of arrival in the study area. The remainder was divided into four sections. The first dealt with the acquisition of land, since one of the suggested reasons for the survival of dryland farming was the increase in the size of the individual farms. The second section dealt with climate and associated moisture problems, attempting to assess farmers' reactions to suggestions that the land should never have been cultivated in the first place because it was too dry. The third section looked at survival and specifically why people stayed and continued to farm the land even after the difficulties encountered in the previous two decades. The final section dealt with adaptation and attempted to focus attention on changes in farming methods which might have helped create more successful agricultural practices. The final page permitted additional comments to be made.

The distribution of the questionnaire was controlled. As the names and addresses of prospective respondents were collected, a letter was sent asking whether they would be willing to participate in the study by completing the survey. The questions had also been put on tape for anyone who felt that hearing the questions might be more convenient. Seventy four letters were sent out and 56 responses (73.7 percent) were returned indicating an interest in answering the questionnaire. The questionnaires were mailed out immediately upon receipt of a positive response. They were accompanied by an addressed prepaid envelope and a letter thanking the respondents for agreeing to participate in the survey. Thirty six of the 56 surveys mailed out were returned completed, 64.3 percent of those distributed. Thank you notes were sent to each respondent when the survey was returned completed and follow up letters were mailed to those who did not answer the survey within a month and again after two months. Most of the individuals who had been mailed surveys and who did not respond, failed also to respond to either of the follow up letters and in several cases even to telephone calls. Four of the surveys were simply returned untouched, the reasons cited being "too busy" and "too complicated."

3.3.2 Interviews

In addition to the questionnaire, 22 tape recorded interviews were conducted. Twenty of these were with current or retired farmers, one was with a former assistant to the district agriculturalist in the Medicine Hat area and one was with Dr. Fred Bentley, an agronomist who worked on the survey of farmers for the Special Areas study produced by the Dominion of Canada's Department of Agriculture in February 1942. Most of these interviews lasted around an hour but five in particular ran to almost three hours. All the interviews were conducted between August 1993 and August 1995, except that with Dr. Bentley which was conducted in August 1990. In all instances the interviews were conducted at the residences of the interviewee and all of them were conducted by me. Three of those interviewed had previously received the questionnaire and had failed for whatever reason to respond to it. Because in each case the individuals had agreed to an interview, no effort was made to press for an explanation regarding the unreturned questionnaire. Two individuals refused to be interviewed, one claiming that he did not want to waste his time and the other claiming that since the death of his brother six months earlier he had absolutely no interest in talking about farming.

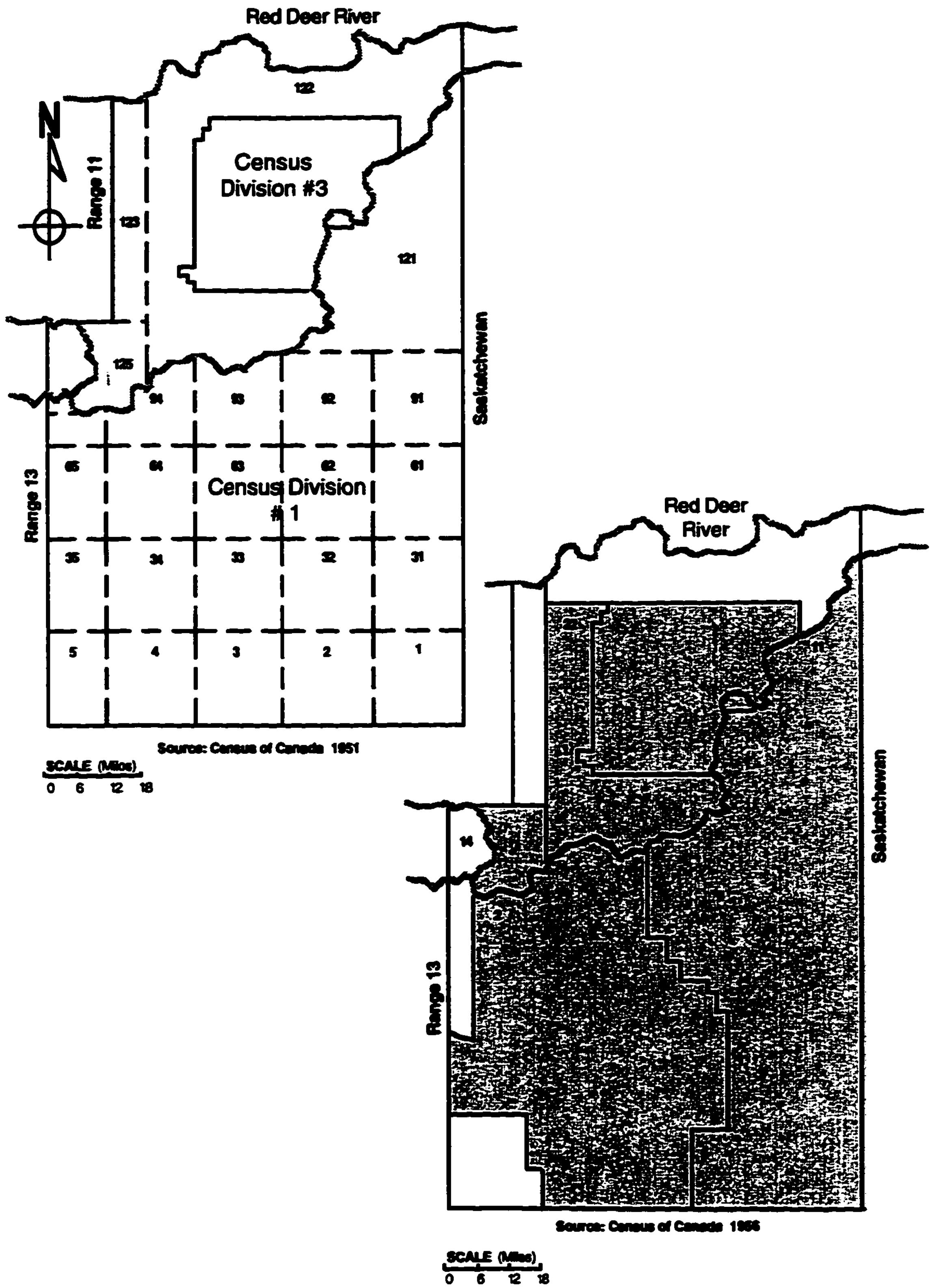
The interviews were all fairly structured in that they followed the direction established in the questionnaire but they could not be classed as "formal" interviews as defined by Moser and Kalton (1971). There was a significant degree of latitude in terms of anecdotal information and in checking the facts, in the latter case by repeating questions or approaching the subject from a different direction. The advantage of the personal, more informal, style of interviewing is that it permits the interviewer to attempt to verify information and to probe memory more effectively than is possible in simply providing answers to a questionnaire. As Wood suggested, verbal reports are often more instructive than hand-written originals, "because they provide the scholar with relatively spontaneous, unprocessed information" and perhaps as importantly, they add the advantage of "second thoughts", and the addition, elaboration and elucidation of ideas (1964:17). The aim was to cover a given set of topics in a more or less systematic way, allowing sufficient time for stories and reminiscences (Moser, 1958). Eyles talks about the informal style of interviewing where "it is not assumed that appropriate question phrasing and style of answer are known in advance. These emerge as the interview progresses in the process of interaction between the researcher and the respondent" (1988:7). All the tape recorded interviews were later transcribed. Figure 6 shows the distribution of both the respondents to the surveys and the interviewees.

3.4 Documentary and statistical analysis

The primary data for the area were collected from the federal census records from the periods from 1936 to 1961. Part of the difficulty with that statistical information is that both the census divisions and subdivisions were changed between the 1951 and 1956 censuses (Figure 7). Prior to 1956, Census Divisions #1 and #3 covered most of the area of the study but after 1956 the area was covered primarily by Census Division #1, with parts of Census Divisions #2 and #4. During this redrawing of the census division boundaries, the subdivision boundaries were also redrawn. In the censuses prior to 1956, the southern half of the study area (Census Division #1) was subdivided into a series of nine township squares thus providing detailed statistical information on the whole area lying south of Medicine Hat. These subdivisions disappeared in 1956 to be replaced by much larger units. North of Medicine Hat in Census Division #3, the subdivisions changed with each census, only subdivision #121, north of Medicine Hat and east of the South Saskatchewan River, including the hamlets of Hilda and Schuler, remained constant until 1956.

Additional information on precipitation and temperature statistics was supplied by Alberta Agriculture for all stations that have recorded or are still recording in southern Alberta. The daily temperature and precipitation statistics are available from the detailed daily weather reports published by Environment Canada. In addition the calculations of the Palmer Drought Index for Medicine Hat and Manyberries were provided by the Climate Adaptation Branch of Environment Canada. Information on crops, growing conditions and detailed crop yields were obtained from the Alberta Wheat Pool. The reports submitted to elevator agents, though sporadic, provide a useful assessment of the crop and moisture conditions in various parts of the southeast. Hand recorded statistics from individual elevator locations throughout southeast Alberta were also found in the Wheat Pool library in Calgary. These forms, obviously filled out annually, start

Figure 7 Census divisions/subdivisions 1951 and 1956



in 1932–33 and provide information on total deliveries to pool elevators, as well as annual average yields per acre for wheat, oats and barley. Archival material was also researched in the Medicine Hat Museum and Art Gallery. There all the the research documents collected during the Saskatchewan Cultural Ecology Research Program, conducted between 1960 and 1973 by John W. Bennett have been deposited and are to date uncatalogued. Similar archival work was conducted at the Etzikom Museum, the Glenbow Archives in Calgary and the Provincial Archives in Edmonton. In the latter location interviews conducted in the early 1970s by a member of the Archives staff were scanned for information. Unfortunately most of those taped interviews dealt with settlement around the first two decades of the century. Some relevant information was gleaned nonetheless.

The final source of local detail was the local histories. Each community has produced a publication over the years, some associated with Canada's Centennial in 1967 and others completed as late as 1994. Dempsey suggests that together "such histories provide an important source of primary information" (1973:171). The study area is covered by these "amateur" written compilations of family detail, containing "all sorts of random facts about individuals of no apparent significance in themselves" (Voisey,1985:336). Nonetheless, these publications do provide some interesting and useful insights into both survival and adaptation if the researcher is prepared to undertake the detailed work necessary.

3.5 Memory

In conducting interviews and distributing surveys requesting recollection of events and situations that are anywhere from 35 to 55 years old, any researcher has to be cognizant of the inherent dangers. Memory is affected by time and subsequent work experience, by distortion, by limitations, and by the current psychological and environmental state of the respondents (Hoinville and Jowell,1978; Baddeley,1979; Pearson, Ross, and Dawes,1992). As Voisey points out "memory can easily forget or confuse events and chronology, but emotional reactions are often more vividly remembered, if somewhat coloured by time." (1985:335)

Because of such limitations of memory, therefore, it is important not to rely on responses exclusively but to link human memory to documented evidence. It is important to have some specific time anchors which can help focus memory and which, in turn, help to eliminate problems associated with timing and with frequency of events. From that point of view the significant external events surrounding World War II provided those anchors. The memories can also be checked against the reports in the local press and against the generalised statistical information available from the census documents. Gittins suggests that although oral history, which is what is being collected through both surveys and interviews, presents many methodological problems, it also presents some positive advantages, not the least of which is "gaining an understanding on aspects of life and work that might not be available elsewhere" and thereby exploring people's ideas and beliefs (1979:96).

So as long as the researcher keeps in mind the dangers of using memorized information obtained through surveys and interviews, those memories can be valuable because they "focus on events that explain the coming of age in a distinct location" (Milner,1992:205).

3.6 Media analysis

The principal newspaper covering the whole area during the period of the study was the Medicine Hat News. That name was used prior to June 30, 1941, and was reverted to on March 11, 1949. Between those dates, the name was changed to the Medicine Hat Daily News. The newspaper was produced six days per week and included irregular news round-ups from a number of locations in the immediate area including Bowell, Bow Island, Etzikom, Hilda, Irvine, Manyberries, Rose Glen, Schuler, Seven Persons, Suffield, Vauxhall and Winnifred.

3.7 Participation and observation

Bennett maintains that much of this research material is "acquired by the usual ethnological field techniques involving actual residence in the area and consequent involvement in the lives and activities of the people" (1969:4). I spent one year as a school teacher living in Schuler in 1966–67 during which time I was involved with the creation of a water co-operative that brought piped water to the hamlet. I spent the next 9 years from 1967 to 1976 living in Medicine Hat also teaching high school and during that time I served on the Regional Planning Commission, initially being appointed to that body by the city of Medicine Hat but later appointed as a provincial representative.

Participant observation has been dismissed by some researchers as being idiosyncratic and therefore not sufficiently objective and scientific. However, Evans suggests that the success of such a qualitative technique results in a "profound level of introspection on the part of the researcher" with respect to the subject being researched (1988:197). Involvement with the people about whom this research is being conducted, has provided an understanding and appreciation of their lives that could not simply have been gained through surveys or interviews.

Chapter 4

Background to the Study: The Physical and Human Context

4.1 Study area

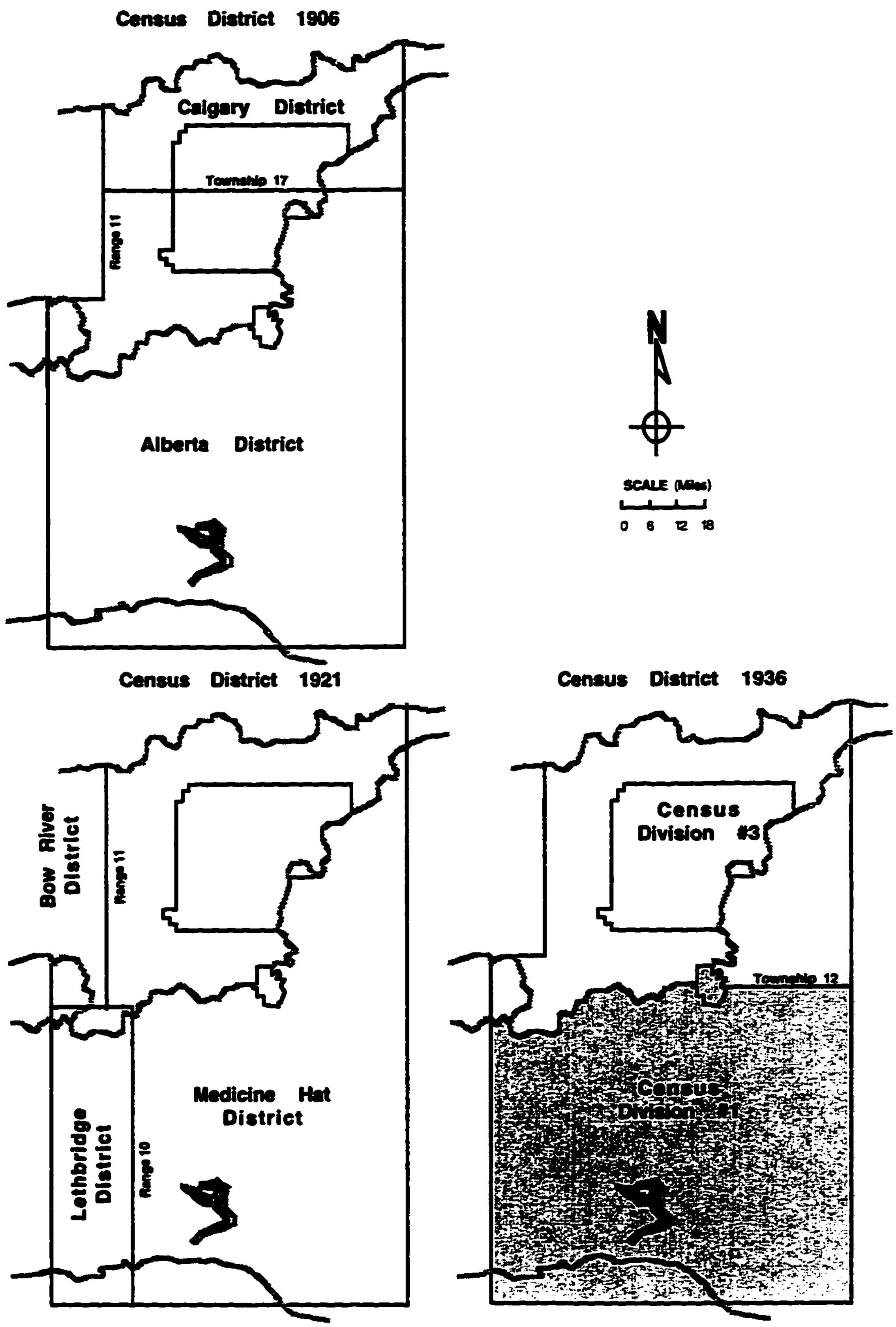
As was stated in the introduction, the study area lies wholly within the Palliser Triangle (Figure 2). It covers an area of approximately 10,000 square miles in the southeast corner of the province of Alberta. The area has seen numerous changes in census divisions since the 1901 census. These changes make comparisons between the various censuses difficult. In 1901 the bulk of the area was, with western Saskatchewan, part of the Assiniboia West census district. By 1906, two thirds of the area and much of the rest of southern Alberta was named the Alberta census district. In 1911, the whole area and more to the west, was listed as the Medicine Hat census district. By 1921 and 1926, despite some minor boundary changes, the Medicine Hat census division ran north from the international boundary to beyond the Red Deer River. In 1931 the area was divided horizontally between Census Division #1 including all the area south of Medicine Hat and Census Division #3 covering the region north of the city. The 1941, 1946 and 1951 censuses showed the same approximate area: changes were made in 1956 when the census boundaries were redrawn. (Figures 7 & 8).

4.1.1 Regional physiography

Southeast Alberta is situated on the third prairie level of the Interior Plains of western Canada. These plains lie between the Laurentian Shield in the east and the Western Cordillera and their basic structure is step-like, rising in three levels towards the foothills of the Rocky Mountains. The whole plain tends to slope both eastwards and northwards.

The whole of the study area, the Cypress Hills apart, lies within the short grass prairie region and comprises an undulating and gently rolling topography (Wyatt, Newton, Bowser, and Odynsky,1941). The general elevation of the area is between 2,400 and 2,800 feet above sea level with the Cypress Hills themselves rising to 4,500 to 5,000 feet. The Cypress Hills form a flat-topped plateau of very irregular outline, extending about eight miles north to south and 17 miles east to west. The hills are dissected by many coulees carrying streams in a radial pattern to the surrounding plain. Cattle grazing predominates in the hills with very little arable farming practiced at all. The topography of the areas surrounding the hills, however, has had a considerable effect on settlement and farming practices. To the south the hills drop away gradually towards the plain and the area is heavily dissected by valleys both from present day streams and from glacial meltwater channels. A soil survey done by the Prairie Farm Rehabilitation Administration (PFRA) between 1935 and 1939 in this particular region showed that approximately one-third (31.4 percent) of the land was unsuitable for cultivation (Wyatt et al.,1941). The study covered an area that stretched from the 49th parallel north to, and including, township 8, and west from the Saskatchewan boundary to range 15. The assessment of the land surface showed:

Figure 8 Map of census districts/divisions, 1906, 1921 and 1936



32.6 percent (890,000 acres)	level to undulating–mostly in the west away from the hills and as far as Nemescam,
36.0 percent (1,005,000 acres)	gently rolling–offering little obstacle to cultivation,
12.1 percent (335,000 acres)	rolling land–possible to cultivate but in brown soil areas rarely better than poor arable land, more expensive to farm, subject to greater water erosion and crops tend to ripen unevenly,
7.0 percent (195,000 acres)	hilly land–usually too steep to cultivate,
10.9 percent (300,000 acres)	eroded land–note sand dunes around the inland drainage basin known as Lake Pakowki,
1.4 percent (40,000 acres)	water and marshes. *(Ibid.*: 35-36*)*

Most of the cultivated land lies to the west of range 8, leaving a large area of land in the southeast corner of the province as range land. In other words, moving west away from the Cypress Hills, the land returns to the gently rolling prairie dissected by streams and rivers which typifies the prairie landscape elsewhere. North of the hills, the land drops away rapidly towards the plains. In the area as far north as the Red Deer River and stretching westwards to Brooks, the land becomes much more level and 60.0 percent of this land is classified as gently rolling, with a further 24.0 percent as rolling. This means from a purely topographical point of view that 84.0 percent of the land is cultivable (Stewart and Porter,1942). However, as will become evident later in the study, the agricultural constraints imposed by topography are really a minor factor when compared to those resulting from soil type and precipitation.

4.1.2 Geology

As far as this study is concerned it is unnecessary to present a detailed study of the "bedrock" geology since the landscape which affects the agriculture of the region directly is relatively recent. Only a brief overview of those aspects of the geology which directly affect the topography will, therefore, be addressed.

Beatty presents a concise picture:

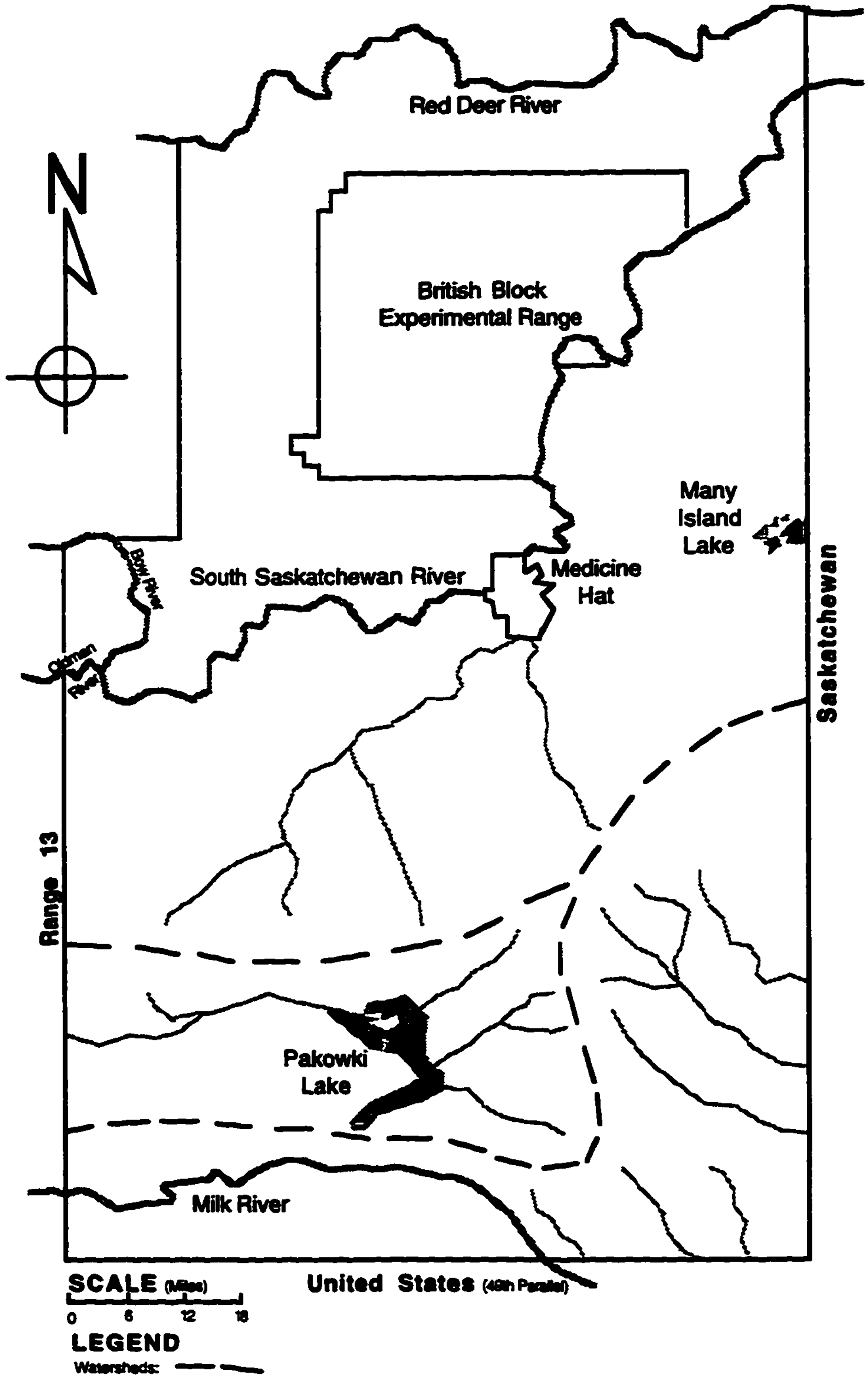
> the contemporary landscape of Southern Alberta (and Southern Saskatchewan) is comparatively young as geologists measure time. It is dominated by the presence of glacial and post-glacial features including many different types of active and stagnant ice depositional forms such as moraines, outwash sediments and till plains, as well as a number of large melt water channels and spill-ways cut during the phases of active deglaciation (1972:16).

In this region, ice from the last great glaciation, the latest Wisconsinan, moved into the area about 20,000 years ago and the retreat commenced about 18,000 years ago. The whole of the study area, apart from the top of the Cypress Hills, was covered in ice and, therefore, large amounts of moraine were deposited throughout the area. The present drainage system still reveals signs of this early melting of the ice, particularly south and west of the Cypress Hills where huge melt water channels, now dry, run northwest to southeast–for example, coulees such as Forty Mile, Chin, and Verdigris. The depth of the glacial material covering the bedrock varies considerably, from five feet to 200 feet, but the original bedrock itself is only exposed where rivers or melt water channels have cut deeply into the glacial deposits. Hence the actual effect of the bedrock on the soil is limited.

4.1.3 Drainage

The principal drainage system of the study area is the South Saskatchewan River. Its two main tributaries, the Oldman River from the extreme southwest of the province and the Bow River from the west, join at the western edge of the study area to form the South Saskatchewan River. At Medicine Hat the river turns north and flows to meet the Red Deer River near Empress and then east and north east towards Hudson Bay. Figure 9 shows the three principal drainage systems: in the south the Milk River, in the centre the South Saskatchewan River and in the north the Red Deer River. There are two other points to note; the first is that there is an inland drainage system centering on Lake Pakowki, and the second is that streams in the extreme south drain south into the Missouri River system. The whole of the study area is covered with large numbers of dug-outs, sloughs and man-made lakes. The sloughs occur in natural depressions and usually result from accumulations of snow melt or intense rainfall. Many of these natural sloughs are highly alkaline and are, therefore, of little or no use either for local irrigation or for stock watering. Indeed, alkali is becoming an increasingly significant problem. The cause is easily understood when a comparison is made between precipitation and evaporation. A Calgary Power report stated that "the mean annual evaporation from large lakes and reservoirs in the period between 1921 and 1950 averaged between 32.5 inches and 37.5 inches compared to a precipitation of 13 inches" (1958,51). The dug-outs and man-made lakes in the dry farming area are almost all the result of PFRA policy enacted in 1935. This federal government initiative encouraged farmers to store water wherever possible and, in addition, provided physical and financial assistance for the building of dams and dug-outs. Thus, in a wet spring the southern prairies seem to be amply supplied with water but by mid-August most of this water may have disappeared and semi-drought conditions may appear to prevail.

Figure 9 Drainage system of area



4.1.4 Soils

The general classification of the soils of the region were made by the Hudson's Bay Company starting in 1879. The area around Medicine Hat was categorized as Class 3 and 4. Montague Aldous, the chief surveyor, termed Class 3 lands as the plains "where the soil was light and shallow and the ground dry and baked". He described the Class 4 soils as basically worthless (Richtik,1985:242). This was the land the Canadian Pacific Railway (CPR) was to reject. More specific and more detailed studies show that the whole of the study area lies within the brown soil zone, apart from two areas of dark brown soils, one around the Cypress Hills, the other in an area close to the Milk River, and one area of gray wooded soils on the Cypress Hills plateau. The brown soils are associated with the short grass prairie. They have an average five to six inch depth in the 'A' horizon comprising "light brown, cloddy to granular clay loam" in which there is about two percent organic matter (Putnam and Putnam,1970:263). This lack of organic matter causes the soil in dry conditions to look gray rather than light brown. Because of the arid climate salts tend to accumulate through eluviation about 15 to 20 inches below the surface (Wonders,1969) and in some areas only eight inches deep (Putnam and Putnam,1970). This salt accumulation causes problems of alkali soils in both irrigated and non-irrigated areas, though less so in the latter (Stark,1987). The brown soils are basically quite fertile given reasonable precipitation, though the 1920s and 1930s proved that the structure of the soil, unless carefully tended, will break down fairly rapidly under dry conditions and constant cultivation. When this break down has occurred the soils are subject to rapid wind and water erosion.

Within the study area, the amount of dark brown soils is very small indeed and as such has very little bearing on the agriculture of the region except where it surrounds the Cypress Hills. These soils have a deeper 'A' horizon than the brown soils, reaching seven to eight inches and are darker resulting from a greater build up of organic material, about four percent. The productivity of these dark brown soils is much greater because they have a higher moisture holding capacity and are more resistant to erosion, as well as having greater natural fertility (Putnam and Putnam,1970).

The gray wooded soils are associated with a subhumid climate where tree cover occurs. The soil has a thin two inch mat of decaying leaves but below that it is light gray in colour. Elsewhere where such soils are regularly cultivated, fertility has to be watched carefully. The small area of gray wooded soil in the Cypress Hills, however, barely deserves consideration.

Since the general term brown soil denotes land suitable for cultivation with adequate precipitation, and since a very large percentage of the study area land lies within the brown soil zone, it is necessary to analyze the known soil differences a little more closely. Three soil surveys conducted between 1927 and 1941 cover the whole of the study area. These surveys were all conducted by staff from the Soils Department of the University of Alberta, in cooperation with the Geology Department and the Dominion Department of Agriculture. Each survey covered an area of eight townships north to south by 15 ranges from east to west--an area approximately 49 miles by 90 miles. Each of the 'sheets' will be looked at individually in order to attempt to draw a broad general picture of the soils of the region and their capabilities (Figure 10). The southern-most study covers the Milk River sheet, the area south of Elkwater Lake, and was published in May 1941 as Bulletin No. 36. The area can be divided into two very general sections, the line of division running approximately north to south through the centre of the area, between ranges eight and nine. To the east of this line the soils are predominantly loams with patches of clay loams and silty clay loams and in the south close to the United States boundary areas of fine sandy loams. The northern part of this section lies within the dark brown soil zone though the soils are still dominantly loams. The whole of the area south of the hills is dotted with numerous "blow outs"[5] and extensive areas of eroded lands mostly associated with streams and river valleys but much more extensive than in the western section. As a typical example of this loam soil here is a more detailed analysis of residual solonized loams from the southeast corner of the region. Figure 11 shows the soil profile.

In large areas where blow outs have occurred the A1 and most of the A2 horizons have been eroded away leaving a hard baked clay surface. Such soils are almost totally uncultivable and are rated only one or two as "poor" or "fair to good" pasture lands. Certainly any attempt at cultivation is only sporadic.
Out of 9,216 quarter sections in a 48 mile square area in the southeast corner of the province in 1940, only 1,824 quarter sections, or 19.8 percent showed any cultivation at all. Of these, only 226 were shown as completely cultivated, whilst 441 had been abandoned totally and the remaining 1,157 were classed as partially cultivated with anywhere from 10 to 140 acres under cultivation (Wyatt et al.,1941:plate 5). The western section of the region shows a significant change in land use rating. The dominant soils in large areas west of Pakowki Lake are silt loams.

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[5] Also called "deflation hollows" are formed in plains regions in dry climates. "Any small depression in the surface of the plain, particularly where the grass cover is broken through, may develop into a blow out. Rains fill the depression, creating a shallow pond or lake. As the water evaporates, the mud bottom dries out and cracks, forming small scales or pellets of dried mud which are lifted out by the wind. In grazing areas, cattle may trample the margins of the depression into a mass of mud, breaking down the protective grass roots structure and facilitating removal when dry. Thus the depression is progressively enlarged." (Strahler,1965:353)

Figure 10 Soil survey sheets of southeast Alberta

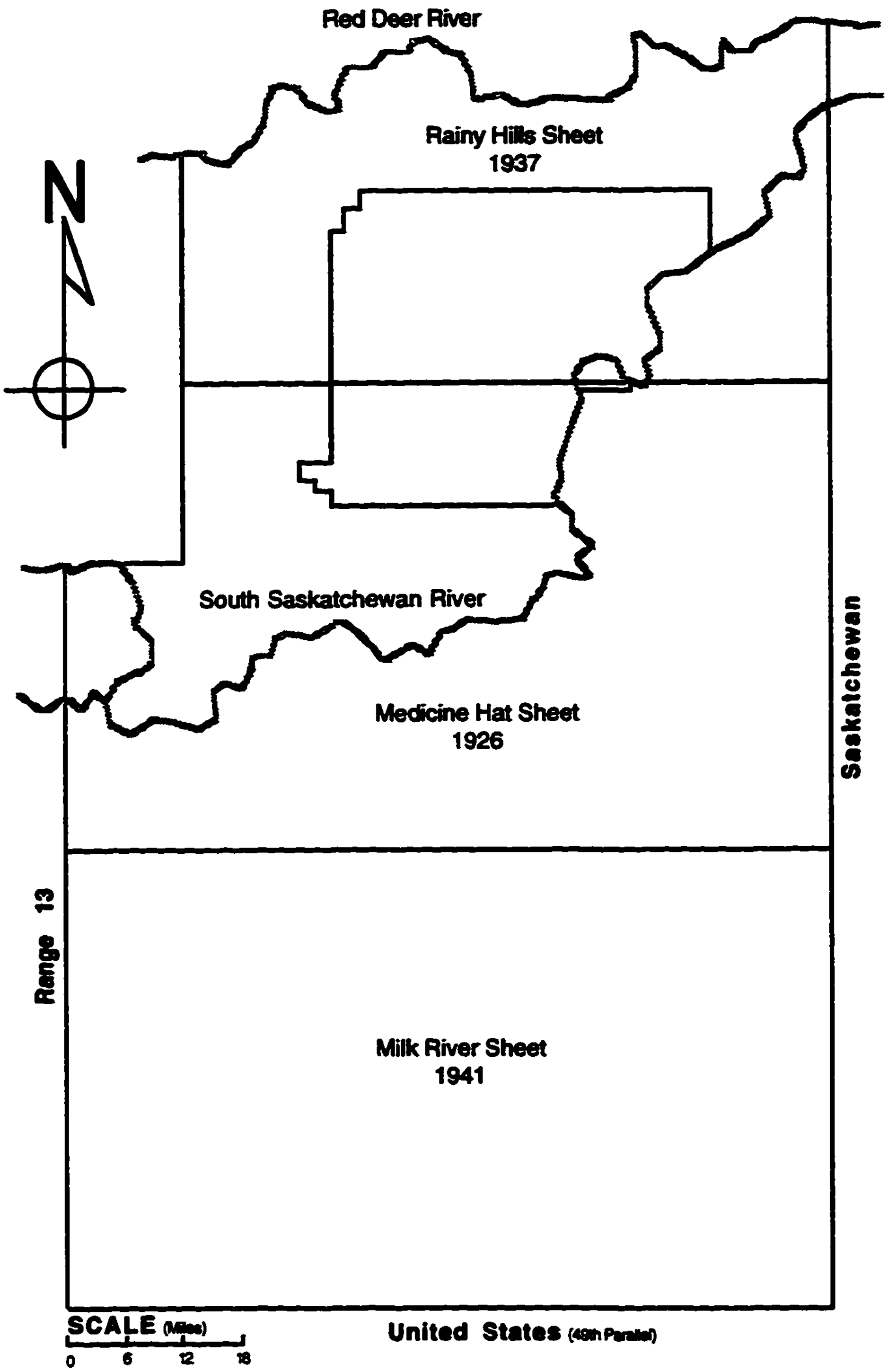
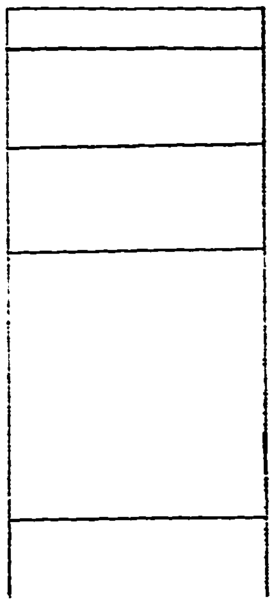


Figure 11 Soil profile



A1 — A1 Horizon–0-2 inches–fine sandy loam, loosely textured

A2 — A2 Horizon–2-3 inches–sandy loam

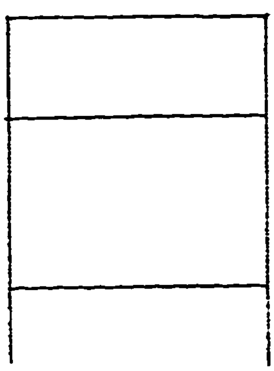
B1 — B1 Horizon–3-6 inches–sandy clay texture–dark brown in colour

B2 — B2 Horizon–6-12 inches–similar to B1 plus lime

C — C Horizon–at 16 inches, hard massive clay almost black in colour.
(Wyatt et al.,1941:42)

Water and wind erosion of soils is mainly confined to stream and river valley sides, for example, along Etzikom Coulee and Chin Coulee as well as the Milk River and any blow-out areas tend to occur in the south. As an example of these generally more fertile soils, the profile taken near Foremost, shown in Figure 12, is typical.

Figure 12 Soil profile–Western section



A — A Horizon–0-10 inches–brown loam, friable

B1 — B1 Horizon–10-22 inches–brown loam–deposition stains and more compact

B2 — B2 Horizon–22-34 inches–lime deposition in loam.
(Wyatt et al.,1941:52)

By contrast to the previous area in the east the soil is rated mostly five and six showing anything from "fair" to "good" arable land. As a consequence, apart from the south and obvious areas of erosion, the land is much more heavily cultivated. For example, in the south west corner of the study area, by 1940, 1,269 quarter sections, or 55.1 percent of the land had been cultivated at some time. Of those 1,269 quarter sections only 69 had been abandoned, 552 were completely cultivated and 648 were partially cultivated. The amount under cultivation increased notably towards the west.

It is important to realize that the soil ratings given by Wyatt were based on past performance up to 1940 under the existing farm practices. However, generalizations from the 1968 Soil Capability for Agriculture Maps published as part of the Canada Land Inventory suggest that most of the land in the eastern section should be classed as four or five whereas most of that to the west should be classified as two to four.[6]

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[6] Canada Land Inventory Capability Classes:

Class 1 Soils in this class have no significant limitations in use for crops.
Class 2 Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation.
Class 3 Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.
Class 4 Soils in this class have severe limitations that restrict the range of crops or require special conservation practices or both.
Class 5 Soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible.
Class 6 Soils in this class are capable of producing perennial forage crops and improvement practices are not feasible.
Class 7 Soils in this class have no capability for arable culture or permanent pasture.

Comparison of Canada Land Inventory capability and the 1930s rating system, named after R E Storie

CLI Capability Class	Corresponding Storie Rating Index	
1	7-8	Cropland
2	6-7	Cropland
3	5-6	Cropland
4	4-5	Cropland
5	3-4	Pasture land
6	2	Pasture land
7	1	Non-agricultural

(Knight, 1967:22)

The Medicine Hat sheet was surveyed much earlier, in 1926, and covers a similarly sized region, from townships nine to 16 and from ranges one to 15 inclusive. The dominant soils are, loam 22.1 percent, silt loam 13.2 percent, loam (hilly phase) 13.0 percent and loam (rolling phase) 10.6 percent. Loam soils in various capacities cover 45.7 percent of the area with most of those classified as loam being found west of Medicine Hat itself, whilst those classed as hilly or rolling are to be found to the east, between Medicine Hat and the Saskatchewan border. The basic loams

> vary in colour from very dark brown to brown with dark brown predominating, and the subsurface and subsoils vary from brown to light gray, with gray dominating. The organic matter layer varies in depth from about six inches to about one foot, the average depth being closer to the former figure than to the latter.
>
> (Wyatt and Newton,1926:28)

This description fits 42.7 percent of the soils of the region though the hilly and rolling loams are obviously more mixed and varied in nature than those of the flatter areas. The silt loams occur north of the Cypress Hills and along the South Saskatchewan River valley. These silt loams by definition contain less than 20.0 percent clay and more than 50.0 percent silt and there are few large uniform areas of such soils. The surface soils vary from brown to very dark brown with an average depth of organic material of about six inches. The agricultural advantage of this soil is its deep silty subsoil and its consequent resistance to drought.

Of the remaining soil types only the fine sands and the fine sandy loams make up any appreciable area, 9.3 percent and 7.4 percent respectively. The fine sand areas occur on the Alberta/Saskatchewan boundary around Many Island Lake and around the junction of the Bow and Oldman Rivers. These sandy soils are very susceptible to wind erosion if the surface vegetation is disturbed. The same can be said about the fine sandy loam though under irrigation these soils prove considerably more fertile than the sands.

Considering the soil capability for agriculture there is tremendous variation within the area from sections classed as one and two to small areas of class seven just south of Irvine and around Many Island Lake. Most of the class one and two soils are in the areas to the west and southwest of the city of Medicine Hat and are mostly in irrigated areas. The remainder of the area is divided into four zones. East of the city of Medicine Hat the soils are classified as five and six which suggests that the area is not really suitable for crops but could be used for grazing. The central section from range 6 to range 10 and immediately west of Medicine Hat is dominated by class four soils though the subclass suggests adverse soil characteristics for good cultivation. The northern part of this central area is dominated by silt-loam, blow-out or solonetzic soils. The soils, when first brought under cultivation, were not as fertile or as desirable in texture as ordinary silt-loams. This is part of the area which, in 1940, was taken over by the Dominion Government for use as a military reserve. The extreme west section of the area is again influenced strongly by classes five and six soils with intervening small but very fertile areas. In general terms then the soils of the Medicine Hat area are "usually fertile and well supplied with plant food, although as a rule they do not contain as much organic matter and nitrogen as the soils in some other parts of the province" (Wyatt and Newton,1926:56).

The most northerly section of the study area is covered by the Rainy Hills sheet survey published in August, 1937 as Bulletin no. 28. The surveyed area actually extends north of the Red Deer River as far as township 24 and includes the area as far west as range 15. The area includes within its boundaries two sections of soils varying in texture from sand to fine sandy loam; one of these occurs along the South Saskatchewan River and to the west of it into the Middle Sand Hills and the second occurs in the extreme north west corner around Patricia.

The remainder of the region is dominated by loams and silt loams interspersed with areas of clay and clay loams. There are two areas of clay and clay loams, one south and east of Jenner and the other between Tide Lake and Iddesleigh, the clays often being referred to as 'gumbos'. The western half of this sheet, in a line from Atlee to Bingville and west, is covered with 'blow-outs'; in fact 37.4 percent of the total area is affected by 'blow-outs.'[7] The dominant soils affected by this type of erosion are loams and silt loams.

These blow-outs are very poor agricultural soils as far as dry-farming is concerned, though irrigation might make them marginally productive. The other soils of significance are grouped together as sands, or fine sandy loams. They are mostly either alluvial or aeolian deposits and lie primarily on either side of the South Saskatchewan River, covering approximately eight townships in ranges one to four and townships 18 to 21. The Middle Sand Hills are aeolian deposits showing definite dune formations and are made up of fine sands. However, these merge over fairly large areas with fine sandy loams where the A horizon is brown and practically structureless. The lime concentration is only 12 to 18 inches below the surface. Part of the area to the west of the South Saskatchewan River was included in the land expropriated in 1940 by the Dominion Government. The land to the east of the river has been cultivated but is the first land to drift during dry periods. These sandy areas are classified 1 in the survey indicating poor to fair pasture while the majority of the remainder of the loam area varies from class 2, fair to fairly good pasture, to the odd township or two of class 4, fair to fairly good arable land, on the eastern end of the surveyed sheet. The 1968 Soil Capability maps show the whole of the Military Reserve as being unclassified. To the east of the Reserve, between the

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7 "The soils of the blow-out series are defined to include those soils having a hard B solonetz-like horizon developed within approximately one foot of the surface and a broken surface topography due to the patchy removal by erosion of varying percentages of the A horizon. In the light brown soil zone these blow-out depressions average about ten feet in diameter and vary in depth from about three to eighteen inches" (Wyatt et al.,1937:24).

South Saskatchewan River and the provincial boundary, the land is shown as predominantly class 4 with classes 5, 6 and 7 along the river itself. The same pattern exists north of the Reserve to the Red Deer River where classes 4, 5 and 6 dominate. West of the Reserve however, in the irrigation areas, the soils improve rapidly to classes 1 to 3.

A general overview of the study area therefore, suggests marginal soils which restrict the range of crops and require special conservation practices. As Wyatt and his various associates point out in all three soil survey reports:

> it would have been a kindness to many of the then prospective settlers if this [a soil survey] had been done [before settlement occurred], as many of the settlers have abandoned their farms after wasting a great deal of money, and years of their lives, in a vain attempt to produce wheat profitably on land that was totally inappropriate. (1926:viii; 1937:v; 1941:5)

4.2 Historical background

The first fully documented expedition through the southern prairies produced a most controversial assessment of the agricultural value of the land. The report of the Palliser Expedition, published in 1863,[8] following that of Hind, published in 1860,[9] provided "the basic conceptual framework for our present interpretation of the physical geography of Western Canada"(Warkentin,1964:147). These reports divided the western interior into two "vast sub-districts . . . one rich and

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[8]The Palliser Expedition, known officially as the British North American Exploring Expedition, was sponsored by the Royal Geographical Society, and the British government, "to explore the potential of the plains south of the North Saskatchewan River and determine the nature of the southern passes through the Rocky Mountains." (Palmer,1990;Spry,1963)

[9]"The expedition of the government of the Canadas in 1857 and 1858, headed by geologist Henry Youle Hind, was more enthusiastic than Palliser's about the agricultural potential of the West." (Palmer,1990)

Edenic, the other sterile and forbidding" (Friesen,1987:108). This view of the western interior as a continuation north of "The Great American Desert"[10] conflicted with that of Lorin Blodget who viewed the commercial and industrial capacity of that area (west of the 98th meridian and above the 43rd parallel) as "gigantic". The desert was indeed a garden (Blodget,1857; Dunbar,1973; Allen,1985; Francis,1989). Yet the "negative image" painted by Palliser of what has become popularly referred to as the Palliser Triangle (see Figure 2) still remains (Francis,1989). Palliser summarized the area as:

> the true arid district, which occupies most of the country along the South Saskatchewan, and reaches as far north as latitude 52° North, has even early in the season a dry parched look . . . to the south the cretaceous and tertiary strata almost everywhere comes to the surface, so that the stiff clay, highly impregnated with sulphates, bakes under the influence of early spring into a hard and cracked surface, that resists the germination of seeds . . . The grass is very short on these plains and forms no turf, merely consisting of little wiry tufts. Much of the arid country is occupied by tracts of loose sand, which is constantly on the move before the prevailing winds. This district, although there are fertile spots throughout its extent, can never be of much advantage to us as a possession. (Eggleston,1938:preface).

Despite Palmer's assertion that Hind was "more enthusiastic" about the agricultural potential of the area, Hind's report stated that the author considered the drainage basin of the South Saskatchewan river as "unfit for the permanent habitation of man" because of low rainfall (Easterbrook and Aitken,1956).

This "negative image" portrayed by Palliser and Hind was to be overwhelmed almost immediately by two factors--romanticism and nationalism according to

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[10]Stephen Long, through his chronicler Dr. Edwin James, wrote the term "Great Desert" on the map that accompanied the report of his 1819-20 expedition to the area west of the Mississippi River. It was an area that was described in the report as "wholly unfit for cultivation and, of course, uninhabitable by a people depending on agriculture for their subsistence." Hind applied the term "Great American Desert" to the southern plains of the Canadian prairies seeing it as an extension of the American desert. (Francis,1989).

Francis. He described the romantics as viewing this last remaining "pristine wilderness" as a "source of serenity, a source of inspiration, a sanctuary . . . where man could truly commune with God." The nationalists, on the other hand, saw the vast region as having "sufficient natural resources and population potential to make Canada one of the most powerful nations of the world" (Francis,1989). This nationalistic boosterism was to receive scientific support from the expeditions of John Macoun.[11] Between 1879 and 1881 he traveled through the southern portion of the North-West Territories and his resulting book Manitoba and the Great NorthWest disputed Palliser's report on the agricultural value of the area. Macoun became "a tireless advocate of the agricultural potential of the entire plains region" (Thomas,1985:227). In his book he stated:

> On my return from Winnipeg I announced the discoveries I had made, and in the presence of nearly one thousand of her citizens with the Chief Justice of Manitoba as chairman, fearlessly announced that the so called arid country was one of unsurpassed fertility and it was literally the garden of the country. (Macoun,1882:611)

The principal reason for the general acceptance of Macoun's assessment of the agricultural suitability of the land, rather than that of Palliser, was that Macoun's was the assessment which the Dominion Government, the CPR and many of the general public wanted to hear. Macoun was a prophet of optimism in an expansionary age. For many who tried to settle the land, the truth lay "somewhere between the calculations of Macoun and those of Palliser" (Thomas,1985:227). The pattern of uncertainty and instability that was to affect settlement and farming in the area is evident in these two opposing assessments reflecting alternately the attitudes of plainsmen towards their environment, a blend of pessimism and optimism (Allen,1985).

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[11]John Macoun was a Dominion government botanist and is called by Friesen "the single most important advocate of western fertility" and "one among many who celebrated western potential in the generation after Confederation" (Friesen,1987:302)

4.3 Agriculture to 1939

The modern development of the Palliser Triangle began with ranching. There is a debate over whether ranching in the foothills and immediately adjacent prairies was simply "an extension of the 'cattle kingdom' of the United States" or whether "the development of the Canadian cattle industry was one of several tactical thrusts which were to contribute to the grand strategy of the National Policy" (Evans, 1979:121-122). Whatever the case from available records the first settler-ranchers came to southeastern Alberta around 1880–81 (Gershaw,1967). The expansion of the ranching area east from the foothills of the Rocky Mountains coincided with two events. The first was the revision of the Dominion land regulations governing leases[12] and the second was the arrival of homesteaders in the foothills thus forcing the ranchers to seek grazing areas on the plains. It did not take long for this portion of the North-West Territories "to prove itself, in all respects, suitable for cattle raising" (Royal North West Mounted Police Report,1881:11). Alexander Begg[13] argued that western Canada would become the chief stock raising country in North America, with '"limitless ranges waiting to be taken up and occupied" (Sharp,1955:238).

Despite this initial takeover of the range by cattle ranching, there were still many problems. In 1882, as a result of appeals from ranchers (Cameron,1954), the Dominion government passed an act prohibiting the grazing of sheep on all Dominion lands (MacInnes,1930). Such moves aided ranchers only briefly, however, and were subject to constant modification as unorganized experiments

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[12]"To control and encourage the growth of this new industry (ranching), the government . . . by Order-in-Council, made provision for the leases of single tracts of land, not to exceed 100,000 acres in size, at a nominal rental fee of 1 cent per acre per annum. These leases were to run for a period of 21 years and the lessee was to stock at the rate of one head of cattle to every 10 acres, a rate which was from two to four times greater than the carrying capacity of the ranges" (Burton,1941).

[13]Alexander Begg was "the resident historian of the Red River community" who wrote in 1881 The Great Canadian NorthWest:Its Past History, Present Conditions and Glorious Prospects (Francis,1989).

by a variety of settlers were conducted to find just what was the most suitable type of agriculture to practice in thisparticular environment.

In 1883, the consolidated Dominion Lands Act was introduced, stating simply that a settler could obtain a grant of 160 acres of land free on all even-numbered sections upon two conditions:

1. the payment of a basic title fee of $10, and
2. residence on the land for a three year period.[14]

Under the revised Act pre-emptions were still permitted though many politicians feared that speculators were benefiting more from the pre-emption privileges than were the original homesteaders (Morton and Martin,1938). Each move in this area was made to attract the farmer and so each move tended to confine the rancher a little more. In addition the coming of the railroad, arriving in Medicine Hat in 1883, was bound to bring more problems for the ranchers. With the comparative ease of east-west transportation, more and more settlers could be induced to come west for the abundance of free land. The boosterism was still in evidence as the following extract from a letter to the editor in The Times of London, October 4, 1883, shows:

> Monday morning: the prairie is no more of a rolling character and well fitted for grazing, as water exists in plenty all along the line. At about 11 a.m. we arrived at Medicine Hat where the Saskatchewan is crossed. The place strikes me as one that will grow to be a very large town, being the centre of a most fertile district . . .

The clause in the CPR contract dealing with land grants[15] played an interesting role in the early development of the study area. In an effort to attract farmers to

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[14]This second provision was later eliminated to permit the settler to 'prove up' his land by cultivation, buildings or stock.

[15]One clause of the 1881 CPR Charter dealt with land grants. These grants were "to be taken up not in blocks, as originally planned in 1872, but in alternate sections--the odd-numbered sections extending back 24 miles deep on each side of the railway from Winnipeg to Jasper House' . . . thus the responsibility for settlement . . . was evenly shared piecemeal . . . by the government and the railway--the one with the free

the area a series of experiments were undertaken. If the "country might be found suitable for grain farming . . . [it would] provide a greater volume of traffic than that resulting from ranching operations." (Hedges,1939:49)

One of these experiments, carried out by the CPR itself, was to establish in 1883 a series of small experimental plots (15 to 40 acres in size) at various points along the main line between Swift Current and Calgary to determine the value of the land. Ten farms were established, two at Stair and Dunmore, within the study area (Manitoba Daily Free Press, 1884). In 1884, the enthusiasm for these farms was considerable and the results of the first year warranted that enthusiasm:

> the land was broken and seeded--the yields of wheat of the ten farms for the year 1884 averaged 22.33 bushels to the acre; oats 54.75 bushels to the acre; barley 18 bushels to the acre; and peas 11 bushels to the acre. The highest yield was at Forres[16] where wheat went 30.83 bushels to the acre. (Strange,1954:62)

Despite such results there were still doubts being expressed about the nature of the land. A debate in the Canadian House of Commons on June 19, 1885, illustrates these doubts:

> Mr. A W Ross, MP (Member for Lisgar)
> For any 300 miles west of Moose Jaw there is better soil to be found than along any 300 miles over any line of railway in Canada. The soil, sir, is excellent. But here comes the question about the dryness of the climate. I examined the grass in the North West country, and I came to the conclusion that, where such grass as that can be grown, though it does not compare with the grass in the east part of that vast plain, there is moisture enough in the soil to produce any quantities of crops we wish.

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homestead as the staple of land policy, the other with land for sale contiguous to each quarter section of free land. The value of this arrangement was appreciated only with the development of dry farming requiring a half section for the best results"(Morton and Martin,1938:268).

[16]Located some 15 miles east of the Alberta border near the community of Hatton, Saskatchewan.

Mr. Watson, MP (Member for Marquette)
I must differ a little from some honorable gentlemen as to the character of the land west of Moose Jaw. From all I have learned I believe those lands are of very little consequence for the purpose of cultivation . . . that the country is almost a barren wilderness.

Mr. Trow, MP (Member for South Perth)
After leaving Regina, and more particularly Moose Jaw, the country is not adapted for successful settlement. It may be, in course of time, but it is my impression that it is barren.

Mr. McKenzie, MP (Member for East York)
I arranged to visit seven out of 10 excellent farms. I observed throughout the whole length of the road that there was scarcely any poor soil to be seen. In quarters between Medicine Hat and Moose Jaw there was an appearance of dryness in the general aspect of the Prairies visible, which was not apparent where the land was ploughed . . . Generally speaking the soil is deep and good. As to climate, I am convinced that sowing early and properly taking care of the land will almost invariably result in a good early crop. (Canada,1885)

The outcome of the CPR experiments was failure after a series of droughts but before the experimental farms were abandoned an attempt was made to settle a group of immigrants in the area. The location was named Josephsburg and was situated about six miles north of the Cypress Hills and 15 miles south of the main CPR line. The settlers were from Austria and arrived in 1889[17] (Hedges,1939; MacDonald,1966; Mohr,1967). After only two years of farming most of the settlers were moved north by the CPR to land east of Edmonton. A few adjusted and stayed. However, the failure of the colony and of the CPR experimental farms seemed to support Palliser's assessment of the land. Nonetheless it was thought that all that was necessary was to bring settlers to the area and allow them to use the same agricultural practices that they had used in humid areas and success was assured (Baltensperger,1977). The belief continued that if the

[17]The settlers all came from an area around Josefburg and Brigidau in Austria. They left there in 1887 and arrived in Halifax in 1888. Some of the settlers stayed in Winnipeg on the way west and others came to Dunmore. 60 families settled the land north of the Cypress Hills.

crop failed it was only a temporary set back and an even more grandiose scheme, headed by Sir John Lister-Kaye, was tried.[18] It suffered the same fate as the CPR experimental farms. What was needed was a farming technique more suitable to the soil and climatic conditions of the area.

Dry farming techniques, suitable to the sub-humid area were begun on the Canadian prairies as early as 1885 but were not widely understood "until very late in the nineteenth century"(Ankli and Litt,1978). However, in addition to dry land farming techniques, the expansion of the wheat growing area and thus the settlement of much of the study area, can be associated with the development of Marquis wheat in Canada.[19] This wheat variety ripens from 98 to 135 days after sowing and produces a higher grade of wheat than Red Fife. It was a widely available variety by 1909 (Buller,1919).

The apparent failure of farming in 1890 led to some interesting speculation in The Medicine Hat Times as to the suitability of the land. In an editorial, reference is made to the fact that it would be almost criminal to bring settlers here to try to make a living out of straight farming. (The Medicine Hat Times, 5 February, 1891). A second editorial makes reference to a growing tendency to embark on the raising of sheep. (*Ibid.*, 14 May, 1891).

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[18]Sir John Lister-Kaye, an Englishman, arrived in 1885 and planned to establish under the auspices of the Canadian Agricultural Coal and Colonization Company (C.A.C.C. & Co.) 10 blocks of land, each of 10,000 acres, along the line of the CPR, between Balgonie in the east and Langdon in the west. He would "show Canadians how to grow wheat and cattle . . . he would be bringing British families to work for him and then settle them on half-section units of land" (MacEwan,1980:69). This attempt to create English-style estates proved a failure but as McGowan suggests there were some major benefits from Lister-Kaye's scheme--namely--(1) he expanded the livestock industry by bringing in excellent animals, (2) he brought in settlers who would later establish farms and ranches, and (3) he generated large amounts of investment capital for the region (McGowan,1982). Lister-Kaye resigned from the C.A.C.C. & Co. in 1889 though some of the ranching enterprises under various managers lasted until 1909.

[19]Dr. Charles Saunders developed Marquis wheat at Indian Head Experimental Farm between 1904 and 1907. The wheat was made available in five-pound samples to growers who requested it in 1909--1910 (MacEwan,1980:101).

In a commentary, reference is made to the advantages the country possesses for ranching and dairying (*Ibid.*, 2 July,1891); while another talks about the superlative ranching and dairying picture is repeated (*Ibid.*, 24 December, 1891), and a third makes reference to mixed farming as being more profitable (*Ibid.*, 4 February, 1892). It seemed there was developing a never ending search for the most suitable agricultural use of the land.

In the decade between 1901 and 1910 the problems of farming in the semiarid regions of North America were partially solved. With wheat prices rising, transportation costs falling, new and hardier varieties of wheat being developed, and dry farming techniques emerging, the surveying of the land for possible homesteading was speeded up (Waines,1938). By 1910, only a few townships remained unsurveyed. For example, in southeast Alberta only three townships were unsurveyed, townships seven, 17 and 19 all within Range 4 (Wonders,1969). However, despite Sifton's[20] promotion of a new immigration policy, the withdrawal of pre-emptions by the Dominion government[21] and the growing shortage of available farmland over the whole North American sub-continent, the anticipated "invasion of what is known as 'Palliser's Triangle' by the grain farmer" did not occur (Alberta Government,1936). Drylanders[22] were allowed to move into the area, however, despite Sifton's department's understanding "that the land in question was mostly unsuited to homesteading. It was too dry, the homesteaders would fail and in the meantime would destroy the prairie sod that made a natural pasturage" (Hall,1985 2:186).

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[20]Clifford Sifton, MP for Brandon North, Manitoba, became Dominion Minister of the Interior in 1896, a post which included responsibility for immigration. His policy was to fill the vacant lands of the west and to attempt to do this (1) the railroad land grants policy was abandoned, (2) the process of securing a homestead was simplified, and (3) the immigration service was highly organized seeking out vigorously settlers from the United States, Britain, and Eastern Europe.

[21]The pre-emptions which were withdrawn in 1896 were reinstated in 1907 after the apparent failure to attract farmers.

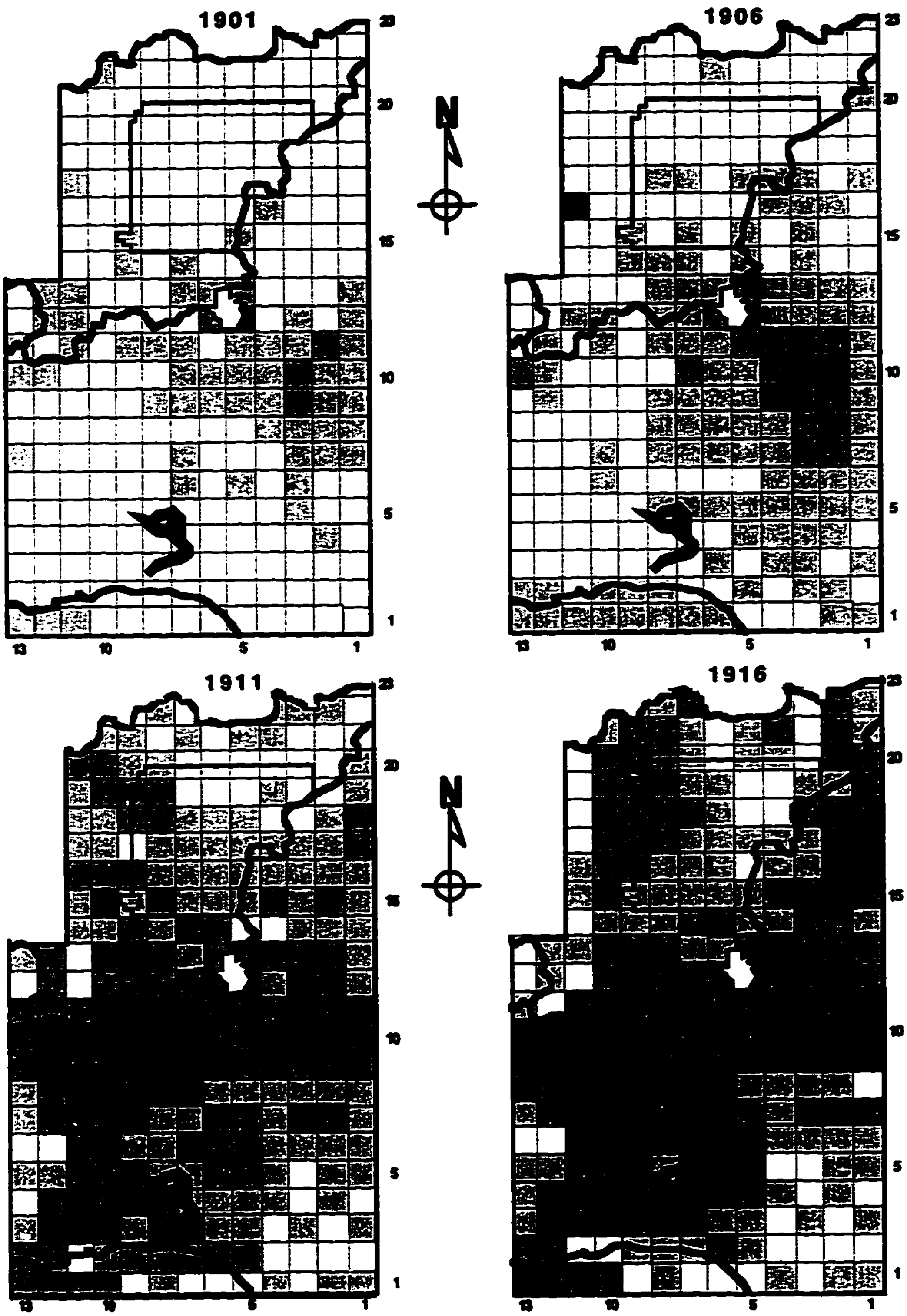
[22]Farmers who practised dry land farming using techniques such as summer fallowing.

According to Breen, the growth of settlement in this region coincided with almost a decade of above average precipitation. In the 11 years from 1885 to 1895, the annual precipitation, recorded in Medicine Hat, had varied between 6.72 inches in 1886 to 14.67 inches in 1888, averaging only 9.74 inches. In the succeeding seven years, the average jumped to 18.49 inches, with three consecutive years, from 1899 to 1901, receiving over 20 inches per year. Breen points out that "with such encouragement, settlers and government officials, who should have known better, were not inclined to listen to those who had lived in the region during the previous decade" (Breen,1983:130).

By 1901 the population in southeast Alberta was still very sparse. The township maps showing density of population (Figure 13) indicate approximately 80 percent of the population lived in the area between the Cypress Hills and Medicine Hat while north and west of that city settlement was restricted to following the CPR line. By 1906 the population in the southeast had doubled but the real growth was to occur in the succeeding decade, coinciding with the CPR's announcement that southern Alberta was "the domain of King Wheat". The anticipated 'invasion' of the dryland area of the southeast took place over the five years leading up to 1911, and the attraction was not the climate or the crop yields.[23] The real attraction was the availability of free land. By 1911, "large scale ranching on open and leased range" had been significantly curtailed by the influx of dryland farmers (Lupton, 1967:57). As more and more settlers arrived in western Canada, the supply of better land became increasingly limited

[23]The precipitation for Medicine Hat for the five year period from 1907 to 1911 averaged only 9.76 inches, compared to the one hundred year average of 13.20 inches, and the wheat yields ranged between seven bushels per acre in 1910 and 22.8 bushels per acre in 1909, averaging only 13.7 bushels per acre over the five year period (Mackintosh,1934).

Figure 13 Township population



SCALE (Miles) 0 6 12 18

LEGEND: 1-50 people; 51-150 people; 151-300 people; over 300 people

Source: Census of Canada, 1901, 1911 and 1921 and new arrivals had to be content with land in the drier areas of the southeast. This land, classed as marginal farm land, would be settled despite evidence that it might be unfit for the type of agriculture proposed. Perhaps the government's desire to have the arid lands settled was reflected in the revisions to the Dominion Lands Act in 1908. In introducing the bill in the House of Commons, the Honourable Frank Oliver alluded to:

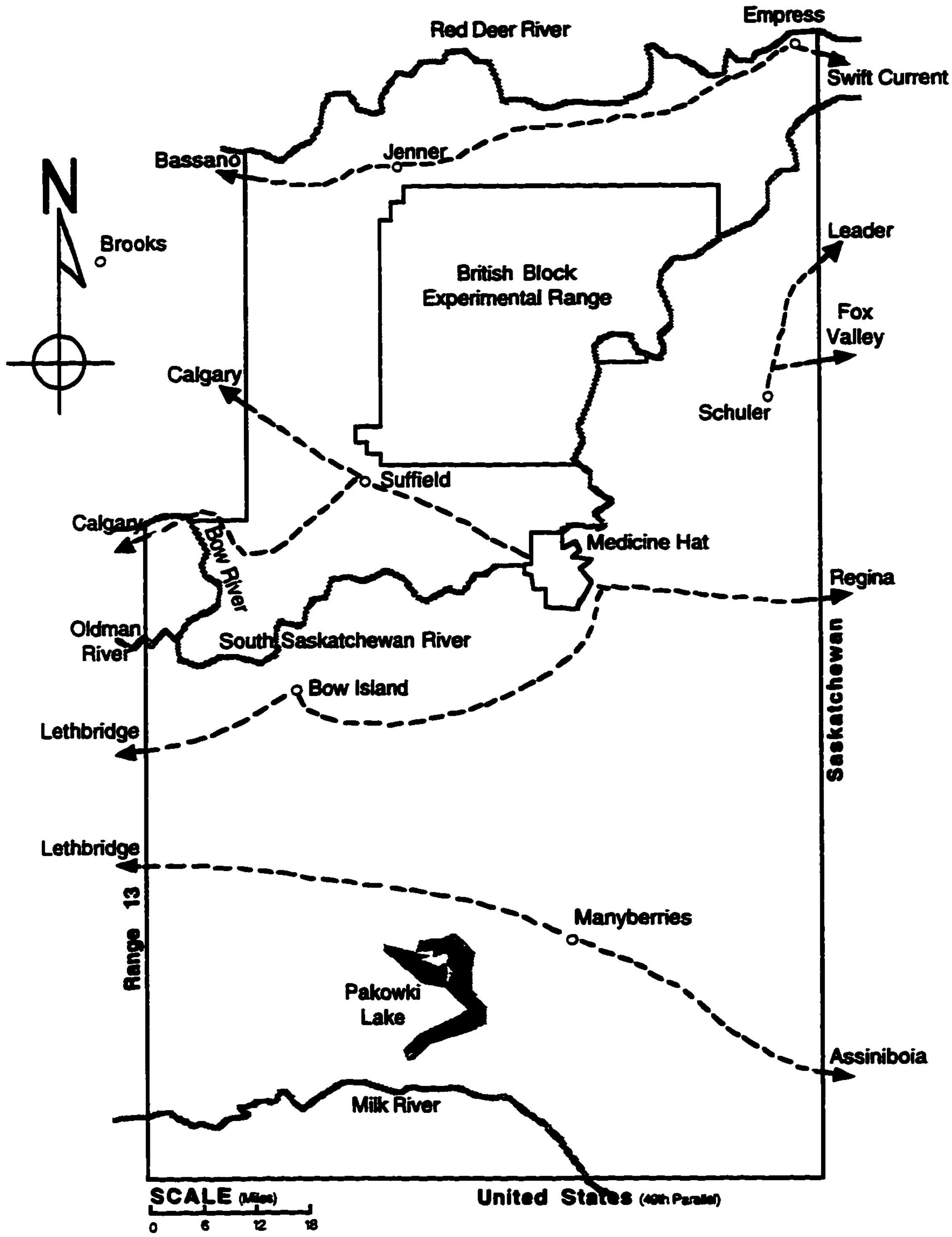
> the belief there is that 160 acres may be a good farm but that 320 acres is a very much better farm and the fact that a 320 acre farm could be acquired at a reasonable price by locating a homestead on an even-numbered section and purchasing from the railway on the odd-numbered section, we believe has been a very great incentive to the settlement of our country by the best class of people, that is, people with the means and ability to carry on farming operations on a considerable scale. (as cited in Morton and Martin,1938:415)

The possibility of being able to acquire an extra quarter section of land had always proved invaluable in settling the dry farming area. The real settlement boom thus began in 1908. German immigrants, some directly from Russia, others from the mid-western United States, began arriving and settling the Hilda/Schuler area and the area around Irvine and Walsh (Lentz,1965). As Jameson explains "south of the border, homesteads were gone and land prices were high, so the farmers' trek northward was an attempt to grasp a fast disappearing opportunity to obtain a homestead or to buy cheap land" (1986:234). As settlers came into the area the lands south and south west of Medicine Hat were settled first, the lands to the north and north west later.

This pattern of settlement is illustrated by two examples, one near Bow Island, west and south of Medicine Hat, and the other near Schuler, 35 miles north and east of the city. The peak period for the settlement around Bow Island was 1908–09, whereas in the Schuler area it occurred in 1910–11. In Township 10, Range 10, west of the fourth meridian and immediately southeast of Bow Island, 57 families are listed as original homesteaders, although only 37 of those families were traced in the local history of the Bow Island area. Of those 37 homesteaders, two settled in 1906; four in 1907; 13 in 1908; 14 in 1909; and four in 1910 (Thomas,1972). In the second example around Schuler, in Township 15, Range 2, only 35 of the original 59 families who homesteaded between 1910 and 1918 have been traced. Of those 35 families, 19 settled in 1910; eight in 1911; five in 1912; and the remainder later (Wiedemann,1973). Census statistics for 1906 and 1911 bear out this influx of immigrants with Census Division #1 showing a 300.0 percent increase in the rural population, from 3,987 in 1906 to 15,903 in 1911 and Census Division #3 showing the rural population growing by almost a 1000.0 percent, from 675 in 1906 to 7,326 in 1911 (Canada Bureau of Statistics,1913).

The decade between 1910 and 1919 could be classed as the decade of expansion and disillusion. It can be divided into two main sections. From 1910 to 1917 can be categorized as a period of high prices for wheat, of relatively moderate climate, and of rapidly expanding railroad construction. The result was that farmers ploughed everything that was available to produce "cash wheat." The outbreak of World War I concentrated that effort. By 1915 there was a huge wheat yield and it was assumed that the "bounty, buoyancy, and expansion" would continue (Jones,1986:xxxiv). However from 1918 onwards there were a series of low wheat yields, wheat prices crashed, and a drought period led to the abandonment of the drier land. Initially, the influx of settlers appeared justified. From 1910 to 1917, the price of wheat climbed from $0.70 per bushel to $2.20. During the same period the precipitation, as recorded in Medicine Hat, fluctuated from a low of 6.45 inches in 1910 to a high of 17.9 inches in 1916. Railway branch line construction sparked more settlement. A line through the northern part of the region, leaving the main CPR line at Swift Current and rejoining it again at Bassano, was built in 1911–12, thus speeding up settlement in the area immediately south of the Red Deer River. Another branch line was built through the south country from Weyburn in Saskatchewan to Lethbridge (Figure 14).

Figure 14 Railway lines



This line, though not completed until 1923, opened up the area south of the Cypress Hills. These additional railway lines opened up areas which had previously been so remote from the main CPR line as to be considered uneconomical for dry land farming, and had remained therefore as ranching land. As McGowan points out "the mere commencement of surveys for these lines late in 1910 was sufficient to spark a rush for the remaining farmlands that these branches would serve" (1983:31). By 1916 the rural populations in the two census divisions had increased by a further 23 percent and the increasing numbers were particularly evident south and west of the Cypress Hills and in the Hilda/Schuler area. The good harvests of the three years between 1915 and 1917 created an air of confidence and prosperity which was destroyed almost immediately by another dry spell. The precipitation and crop yield figures in Table 1 show clearly the fluctuations (the data are for Medicine Hat).

TABLE 1: Precipitation and crop yields, 1915–1919

Year	Precipitation (in inches)	Wheat Yield (bushels per acre)
1915	16.13	37.48
1916	17.90	23.33
1917	13.42	20.00
1918	10.20	2.99
1919	7.66	2.36

Source: Mackintosh,1934; Jones,1986

Even though prices for No.1 Northern wheat were still high at $2.20 per bushel in 1918 and 1919, yields of under three bushels per acre were far too low to make farming profitable on quarter section farms. The over optimism which had characterized the early settlement was severely damaged by the droughts of 1918 and 1919. To many observers it proved conclusively that these arid regions were "more suited to cattle and sheep than to wheat" (Easterbrook and Aitken,1956:479). "Drought, discouragement and despair" were beginning to spread amongst the settlers (Alberta Government,1936:13). They had to make choices. They could either stay and hope that next year would see a return to good crops, or they could leave everything and move either north to another homestead or farther west. Some left, but many stayed believing in "next year country" (Burnet,1951; Flower,1972). Jones (1986) chronicled the prairie dryland disaster which lasted from 1917 to 1926. His assessment that the Dominion government committed a great blunder by permitting settlement to take place in southeast Alberta is echoed by Friesen. It also reinforced the view expressed in the Government of Alberta's report on <u>The Rehabilitation of the Dry Areas of Alberta</u>, released in 1936, that the opening up of this "short grass prairie" for widespread and almost indiscriminate cropping by inexperienced settlers was "one of the greatest mistakes of national policy ever made" (1936:13).

Friesen agreed that "the decade after 1908 was marked by a great error in Canadian domestic policy. In throwing open to settlement the[se] relatively dry regions . . . the Canadian government was taking a grave risk" (1987:328). That risk, according to Baltensperger (1977), was primarily the result of the discrepancy between the farming experience of the settlers coming from humid areas and the reality of the subhumid prairies. That discrepancy existed in the Canadian "subhumid prairies" in much the same way that it did in those similar areas of the United States.

By 1921 some emigration had already started. In Census Division #1, for example, 15 of the 22 census subdivisions showed a slight decrease in rural population (Census of Canada,1921). The successive crop failures in 1918 and 1919, inflation and depression all created impossible conditions in the marginal dry lands and "when prolonged drought was accompanied by unprecedented dust storms, insect plagues and weed infestations, the outcome was calamitous" (Jones, 1986:xxxvi). The picture was not quite the same in CensusDivision #3. There the population increased by a further 34.0 percent the attraction being the continuing availability of land and the development in the west of the irrigation areas.

The movement of people away from the dry lands of the southeast began as early as 1918 and by 1920 wind erosion had become a serious problem in the area on the Saskatchewan boundary and was threatening to engulf other areas as well (Gray,1967). Emigration had begun and in Alberta,

> the movement out of the border country became almost a stampede between 1921 and 1926. Over the whole of the Triangle the previously heavy immigration became heavy emigration. When the census was taken in 1926, more than 10,000 abandoned farms were counted in Alberta. Half of them were in Census Divisions 3 and 5 which hug the border north of Medicine Hat. In the division immediately north of Medicine Hat the population dropped by 30 percent within 5 years. (*Ibid*:15)

Similar farm abandonment occurred south of Medicine Hat and particularly in the Manyberries area. In fact, some movement out of that area began as early as 1912 but definitely reached a peak in 1921.

It was the beginning of a period that prompted the provincial government to provide massive amounts of relief aid (Stutt,1947). As early as 1920, the province of Saskatchewan established a Royal Commission to study the problems of dry land farming. The report, presented in 1921, made some very specific suggestions relating to the south west corner of the province, suggestions that were just as applicable to southeast Alberta. The Royal Commission proposed:

1. that a greater part of the region comprised good farming land;
2. that those parts considered unfit for grain farming should be made community grazing lands for cattle;

3. that farmers settled on impossible land should be assisted to good homesteads;

4. that a soil survey of the region should be done;

5. that research should be carried out to find crops suitable to the conditions in the area (Morton and Martin,1938:116).

Some of the suggestions were implemented quickly and the Dominion Government established an experimental farm at Swift Current to carry out research into crops suitable for the area. The government of Alberta "reversed its previous order of importance from grain and livestock to livestock and grain. With two or three sections of pasture land, plus a section of wheat land, Alberta officials thought a farmer might prosper even in the dry belt" (Gray,1967:16).

The real problem lay not just in the lack of precipitation and in soils that were not suited to continual wheat growing, but in a combination of circumstances including "the radical change in farming systems and methods" that resulted in a "risky one-crop system", high rates of interest, short term credits, excessive freight rates and "the demoralization of the agricultural markets" (Jones,1986:10). The latter factor is best illustrated by the drop in the price of No.1 Northern wheat from $2.21 per bushel in 1918 to $0.65 cents per bushel in 1923.

That the exodus of people was significant is evident in the 1926 census in terms of the number of abandoned farms: 1,336 in Census Division #1 and 2,352 in Census Division #3. Of those abandoned farms 60.0 percent in both Census Divisions were under 160 acres. Of the 3,377 farms still in operation in Census Division #1 in 1926, 53.0 percent comprised two quarter sections (320 acres) or less. Of the 2,118 farms in operation in Census Division 3#, 66.0 percent comprised 320 acres or less (Census of Canada 1926). That picture would change dramatically in the next decade with average farm sizes doubling in response to the special conditions of the dryland region.

From 1924 to 1927 crop yields improved, and the price of wheat rose, creating again, for those who stayed behind, a belief that the worst of the drought and the depression was over. This marginal upswing in prices would cause even greater problems according to Gray (1967). Farmers who had remained in the dry area, bouyed by optimism, borrowed money to buy abandoned land to expand their holdings and to purchase tractors and cars. So when the crops failed again and grain prices dropped, those farmers were faced with debts they were unable to meet. Gray's contention of expansion by those who remained is supported by census information, as illustrated in Table 2, which points to fewer and larger farm units, plus increased mechanization in the decade 1921-1931.

The exodus from southeast Alberta continued in the 1920s despite all attempts by the CPR through its Department of Colonization and Development to encourage immigration. Settlement of eastern Europeans would continue into the early 1930s, but those arriving were greatly outnumbered by those leaving. By 1925, the 160 or so Dutch settlers who had established themselves near Alderson in 1921 had departed--driven out because the land was too dry. Initially a colony had been established in 1910 at New Holland, 20 miles north east of Alderson. When they left some went to Monarch in southern Alberta but most left for the state of Washington. In 1925 and 1926, poor crops in the Foremost region led to an exodus of Estonian families to Oregon and Washington (Palmer,1972). Movement even took place within the study area. In 1920 the CPR had constructed some 25 ready-made farms in the area south of Tilley for the eventual use of soldiers returning from World War I. Apparently the soldiers were not interested in settling on the farms. Most of the parcels were operated by the company until 1927-28 when several were sold to dryland wheat farmers from the Medicine Hat-Alderson region.

TABLE 2: Farm size and mechanization, 1921–1931

	Census Division #1		Census Division #3	
	1921	1931	1921	1931
Number of farms	4411	3709	3921	2754
Average size (acres)	509	962	452	1122
Tractors	-	1492	-	873
Combines	-	503	-	161
Trucks	-	332	-	769

Source: Census of Canada, 1921 and 1931

The provincial government made some attempt to assist beleaguered farmers in the dry farming belt. It initiated a resettlement project that moved between six hundred and seven hundred families from the drought area to new land in the Red Deer/Rimbey area (Gray,1967). In 1926 it passed the Land Utilization Act which permitted the province to withdraw land from cultivation and bring it under government control. Along with changes to Dominion government regulations, this new provincial legislation permitted and encouraged homesteaders to acquire additional land either by pre-emption or by purchase. The changes permitted those who stayed to expand their farms. There persisted the belief that larger farm units of even one or two sections (640 to 1320 acres) were essential to farmers' survival in the dryland region. Indeed, most of the failures tabulated in the 1926 Census were applied to farms of less than three quarters of a section (480 acres) in size–97.5 percent of the failures in Census Division #1 and 96.8 percent of the failures in Census Division #3 (Census of Canada 1926). By 1931, the number of farms over one section (640 acres) in both Census Divisions had increased significantly.

TABLE 3: Farms over one section. 1926 and 1931

Census division	1926 Total farms over 1 section	1926 %age of farms over 640 acres	1931 Total farms over 1 section	1931 %age of farms over 640 acres
CD #1	583	17	1663	45
CD #3	227	11	969	35

Source: Census of Canada, 1931;
Census of the Prairie Provinces, 1926

As Mackintosh pointed out, "the larger farm is definitely on the increase. In view of the lower yields of the semiarid belt, the profitable farm enterprise is one which works large areas of cheap land quickly and cheaply by means of machinery" (1934;116). Stewart and Porter concurred–"a producer of typical ability, securing this area (480 acres) of marginal land without payment for its use, could expect to obtain a level of returns already referred to as sufficient to induce continuity of production" (1942;19). Others, however, felt that something was still wrong in the undying faith of the dry land farmer in a single wheat crop. Symptomatic of that feeling is a reference in a House of Commons address by Robert Forke, leader of the Progressive Party, to "wheat mining"(Canada,1924). In the previous year Forke saw the solution to the problems of the prairies in a reorientation of the agricultural life of the Canadian west. In a speech in the House of Commons he commented that it seemed to him "that different methods will have to be adopted if the farmer is going to succeed. We will require to have small farms, more intensive cultivation, and what might be called mixed farming. The day of wheat growing has gone by" (Canada,1923). In a similar vein Hurd and Grindley commented that "wheat growing will persist until economic limitations make it impossible by making it unprofitable. Only then will western farming be conducted upon the recreative lines of an economically sound and permanent human industry" (1931:185). Monoculture persisted, however, and despite a slight boost in wheat yields in 1927 and 1928 to 20 bushels per acre, the low wheat prices, averaging only $0.98 cents per bushel from 1922 to 1929, meant that the income needed to support a farm of 160 acres was not available from single cropping of wheat in the dry land area of the southeast.

The census statistics in Table 4 indicate that 1926 was the low point for rural population in the region and that by the 1931 census the number of occupied farms had increased, as had the rural population.

TABLE 4: Numbers of occupied farms and population, 1926 and 1931

	Census Division #1		Census Division #3	
Census years	1926	1931	1926	1931
Number of occupied farms	3377	3709	2118	2754
Total rural population	13471	15809	9075	11831

Source: Census of Canada, 1931;
Census of Prairie Provinces, 1926

The decade from 1928 to 1938 has become known as the "dirty 30s" in western Canada. This generalization masks a number of factors which collectively caused a farming disaster. Annual precipitation statistics for the city of Medicine Hat do not reveal an exceptionally dry period except at the beginning and the end of the decade. In 1928 and 1929 there were only 7.64 inches and 8.17 inches of precipitation respectively and in 1936 and 1937, only 9.63 inches and 9.80 inches. During the intervening years, however, the precipitation matched very closely the 100 year average of 13.20 inches, 1930 to 1935 having an average of 13.37 inches. Precipitation was not the main problem. The farming practices that had pulverized the top soil and left it exposed to the high winds sweeping across the prairies caused massive soil erosion. In addition very low wheat prices, as low as $0.35 cents per bushel in 1932, plagues of grasshoppers in 1933 and heavy August frosts and rust in 1935 all conspired against the farmer who attempted to make a living growing wheat.

However, despite all these problems census statistics do not reveal the same exodus from the region as had occurred in the 1920s. Indeed, statistics for the period 1931 to 1941 show slight increases in the numbers of farms in the Census Divisions (CDs) and in the total rural population.

TABLE 5: Occupied farms and rural population, 1931–1941

	1931	1935	1941
Census Division #1			
Number of occupied farms	3709	3899	4107
Rural population	15809	17455	16408
Census Division #3			
Number of occupied farms	2754	2575	2837
Rural population	11831	11836	12151

Source: Census of Canada, 1931 and 1941; Census of Prairie Provinces, 1936

The area suffered seriously from the drought but the mass exodus from the land similar to that of the 1920s did not occur. Relief was supplied both federally and provincially through the municipalities not only in terms of food, shelter and medical assistance and in some cases seed, fuel and other supplies but equally important in developing improved farming techniques. This was to provide the base for the emergence of a more stable farm economy in the region in the 1940s and 1950s.

Chapter 5

Climate as a Variable in Survival and Adaptation

5.1 Introduction

"I said O.K., maybe we do complain but we have reason to. We live by the weather, we live by the temperature, we live by these things. These things don't always fit with what we need and so that's what people complain about." (Interview,1995)

When discussing farming practices in southeast Alberta with dryland wheat farmers, the conversation invariably turns to the climate, principally precipitation and occasionally temperatures. Dryland farmers are certainly aware of drought hazard "in fact, preoccupation with precipitation seems characteristic" (Saarinen,1966:140). Whether there is precipitation, when it occurs and how much, are integral factors in the production of a poor, average or good crop in the region in any one year. It must be established, therefore, whether a significant variable in the survival and adaptation of dry land farming in southeast Alberta in the 1940s and 1950s was the result of a change in the total precipitation and its distribution or in any other climatological factor.

Waines maintained that "climate is beyond man's control. He must adapt himself to it. 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." (1938:215) This view of climatic determinism, that the climate in such a "chronic fringe" region, controls the course of human action, pervades a study of southeast Alberta to a very large degree and justifies a separate assessment of its impact.

After the difficulties encountered during the "dirty thirties," higher amounts of precipitation could have made survival somewhat easier by improving crop yields, though improved precipitation alone certainly would not have solved all the economic problems. Additional adjustments were also occurring. A significant number of small farmers left the land in the 1920s and 1930s, during the drought periods (Jones,1985; 1986; 1987; Berton,1990), thereby providing room for those who remained to expand the size of their farms, or for the land to be allowed to return to the short grass prairie. Technology improved. Trial and error farming techniques showed that some areas of the southeast were, indeed, not suitable to arable farming (Murchie,1936; Gilchrist,1955; Carlyle,1983; Friesen,1987). Nonetheless, because of variable soil types within the area there were locations where arable farming could be practised successfully provided there was adequate precipitation.

The question of adequate precipitation is an intriguing one. In the introduction reference was made to a brief comment by a local farmer after a rainfall suggesting that the rain "was a day or two too late." This comment led to an interesting discussion about how much precipitation was needed to grow a reasonably good wheat crop on dry land in southeast Alberta. Figures 18 and 20 show that the best yields occur in wet years and yet the impact of even a short rainfall can be quite dramatic. In the survey, the question was "how much precipitation is needed to produce a good wheat crop?" The definition of a good crop was not sought so for some of the respondents crops of over 30 to 35 bushels an acre were considered good, while others felt that 15 to 20 bushels would be a good crop. Approximately 20 percent responded that precipitation of 12 inches or more would be needed for a good crop, some going as high as 18 to 24 inches, others adding the proviso that it would "depend on the time of year it falls" or it would "depend on heat and winds." The majority however responded with figures of less than 10 inches but once again there were, in most cases, caveats such as "six inches of water at the right time will produce a good wheat crop," "if moisture is conserved from the year before thru (sic) summer fallow, then two inches or three inches is enough," "this depends on timeliness, five inches will produce a good crop if received at optimum time," "about three good rains totaling about six inches" and "one inch after seeded, two inches in June and July to finish off." All felt that the land was productive if only the moisture, and in most cases a relatively small amount, would fall at the right time in spring and summer. It was this belief that kept many of those that survived on the land, knowing that if this year the crop failed, next year it might be the "million-dollar crop" (Burnet,1951).

The question then is were there any significant changes in temperature or precipitation patterns during the 1940s and 1950s which might explain improved farming conditions for the dry land farmers? In order to answer this concern it is necessary to look at climatic relationships through both space and time. In addition to understand the micro-climatic variations and impacts within the region a comparison will be made of five stations where continuous climatic records have been collected. Finally an assessment of precipitation effectiveness will be made by looking at both monthly and daily precipitation patterns for certain locations within the study area.

5.2 General climate

Locally it is common to hear that anyone who tries to predict the weather in southeast Alberta is "either a foreigner or a fool." The unpredictability inherent in this saying is obvious simply by understanding the different analyses of the suitability of the land for agriculture produced by Palliser and Macoun.

The climate of the area comes under the general Köppen classification of a Cool Middle Latitude Steppe Climate (BSk). This system classifies it as a dry climate (B), where potential evaporation exceeds precipitation on the average throughout the year; a steppe climate (S), a semiarid climate with about 15 to 30 inches of rainfall a year; and a dry-cold climate (k) with mean annual temperatures under 64.4° F (Strahler,1965:105–06).

The study area lies partially in a rainshadow area on the lee of the Western Cordillera. This mountain barrier affects maritime air masses from the Pacific Ocean. In summer the high temperatures are the result of modified Maritime Polar or Maritime Arctic air which has crossed the Western Cordillera and has been heated adiabatically. Day-time temperatures in the 90°F range are not uncommon between June and September. In winter the prevalent air masses are polar continental and their effects can be felt over long periods of stable cold weather, with temperatures in the 0°F range in January. Such intense cold weather can be disrupted in the region by the occurrence of the chinook, a warm westerly wind, capable of raising the temperatures by as much as 50 degrees in a very short period of time. The Indians named the chinook wind "the snoweater" (Gershaw,1967:99) and indeed the beneficial effects of the chinook were used as a selling point by the CPR in some of its early advertising of this agricultural land.

Precipitation is usually deficient in the whole study area and amounts can vary significantly both annually and regionally. Most of the summer precipitation is convectional though it can be augmented in May and June by low pressure systems bringing rain in from the coast. In winter the precipitation is mostly frontal brought by the occasional depressions which replace the continental high pressure areas temporarily. The amount of winter precipitation rarely averages much above one inch in any one month. Thus the soil is often frozen to a depth of several feet during the winter because of little snow coverage.

Critchfield summarized the necessity of more in-depth assessment of the climate of the region well by stating that "in no climate is there more danger in the use of statistical averages than in mid-latitude semiarid climates" (1966:196).

5.3 Relationship through space

Palliser clearly delineated his "semiarid belt" which was to become known as the Palliser triangle (Palmer,1990), the area called the "prairie dry belt" (Jones,1987). The centre of this semiarid belt lies in southeast Alberta and southwest Saskatchewan (see Figure 2 and Figure 3). In order to measure whether the designation was justified the precipitation figures for a 30 year period from 1931 to 1960 for 37 locations in southern and central Alberta and southwestern and central Saskatchewan were mapped. Although precipitation figures alone are no indication of suitability for crop production (Thornthwaite,1948), they do provide an indication of the relative status of one area in comparison with another. There are many problems associated with annual precipitation figures since they do not describe the distribution on a monthly or, in the case of dryland farming, on an almost daily basis because, as will be shown later, when the precipitation falls is often more important than how much falls (Gibbs and Maher,1967). The figure of 12 inches of precipitation was chosen as the "dry end" of Stone's semiarid definition (McGinnies,1969:282).[24] In addition Mackintosh proposed that on the Canadian prairies if the annual precipitation is less than 12 inches, then it is insufficient for crop production (1934). Figure 15 shows the percentage based on number of years between 1931 and 1960 when the precipitation was 12 inches or less in the area. From an Alberta perspective the driest areas occur around Manyberries in the south of the study area and the Jenner-Empress area to the north. In both locations the percentage of dry years exceeds 50. In the case of Jenner in 17 of the 30 years (57.0 percent) there was less than 12 inches of precipitation. In the case of Manyberries 16 of the 30 years (53.0 percent) were considered dry while in Medicine Hat in between these two locations, in only eight of the 30 years was precipitation below 12 inches (27.0 percent). Precipitation figures as low as these in Jenner and Manyberries indicate a potential for drought conditions. Using any statistical measure available for precipitation, southeast Alberta is the driest corner of the province and along with southwest Saskatchewan the driest area of the prairies.

5.4 Drought

The problems of farming on marginal land and the consequent impact of precipitation are summed up very simply by Fite. In the introduction to his essay on "The Great Plains: Promises, Problems and Prospects," he suggested that

> much of the history of the Great Plains can be written around the uncertain, undependable, and often destructive weather of the region. The cycles of hope and despair, prosperity and poverty have been associated with periods of relatively abundant rainfall and severe drought. Other factors such as farm prices have also affected the region,but nothing has so dominated life on the plains as rain or the lack of it (1979:187).

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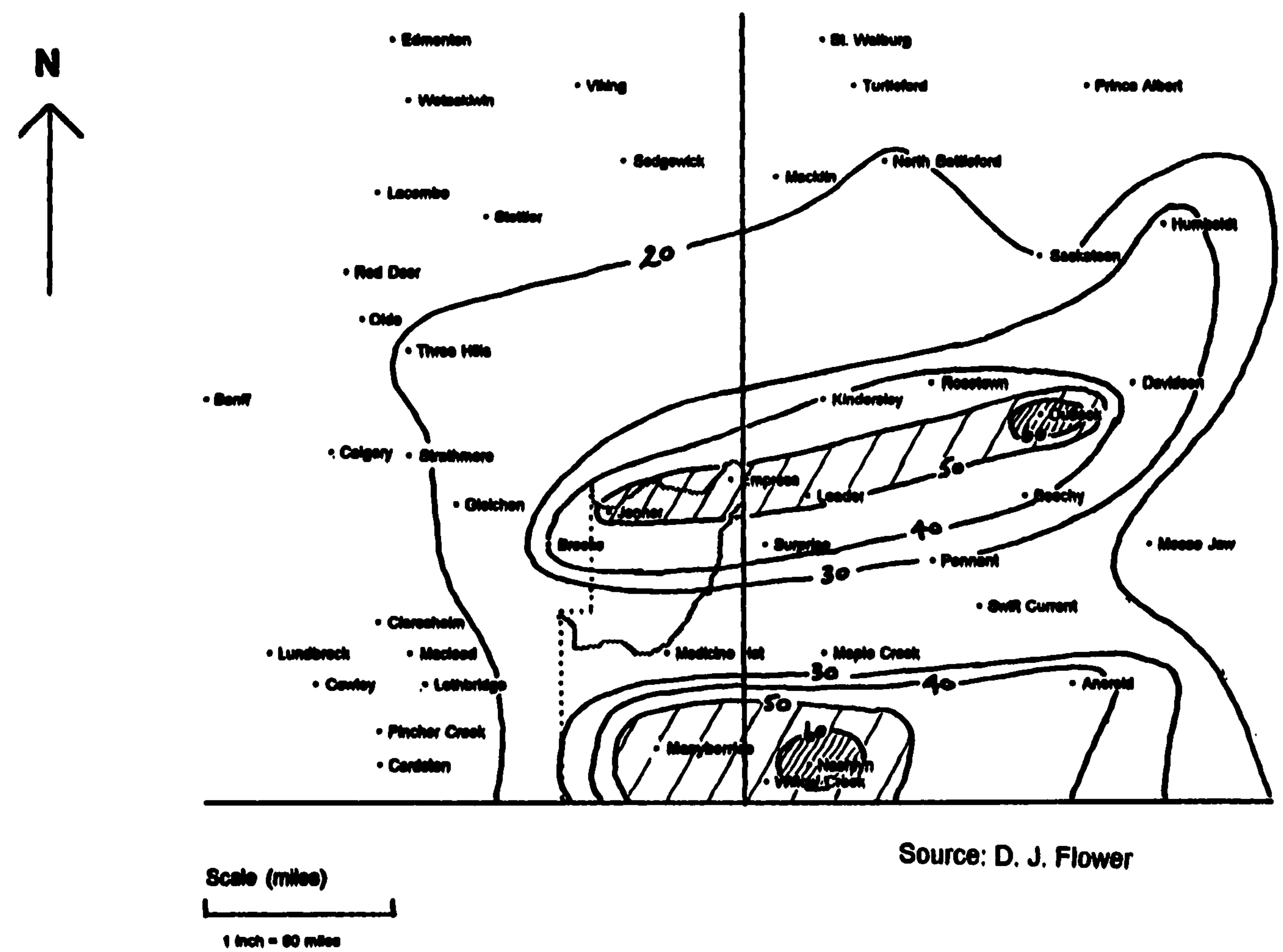
24 "Semiarid: Partially arid: on the basis of rainfall, a region in which the mean annual rainfall is 12 to 16 inches, and, by some observers, between 10 and 20 inches." R. O. Stone "A desert glossary," *Earth-Science Review 3 (1967)*, 211–268.

His assessment followed that of Robert Dale presented over a decade earlier at a symposium on the Great Plains. Dale commenting on the climate of the Great Plains, stated:

> the recurring droughts, interspersed with seductive rainier periods, are a normal feature of the Great Plains. The comparatively wet years between droughts provide settlers in the Great Plains with a false sense of climate and invite over-extension of wheat production and land speculation, which require relief measures or emigration from the area during the ensuing dry periods (1967:35).

It is necessary to understand the impact of drought, not simply for the phenomenon itself and what might cause it, but also for its direct impact on the settlers and the farmers who live in areas affected by it. In addition, how the threat of its recurrence affects their farming patterns, their lifestyles, and their expectations has also to be considered. It is the impact of drought conditions on the farmers that is as important to historical geographers and environmental historians as the physical cause of the drought itself (Cronon,1992). Drought is difficult to define. According to Heathcote "a general and useful definition of drought seems to be virtually impossible" (1969:176). The useful starting point might be a "severe water shortage" but that statement in itself presupposes that there is a definition of what is a suitable amount of water in any particular district. Talking to dryland farmers, for example, reveals that provided there is sufficient ground water at planting time, a good wheat crop could easily be grown with as little as three inches of rain if it fell at the appropriate times. However, three inches of rain during the growing season, that is from late April through to the end of August, would be considered very dry indeed even for southeast Alberta. Heathcote suggested that a drought may not be recognized as such unless "some economic setback occurs as a result of the shortage" (1969:176). Going one step further and differentiating between a meteorological

Figure 15 Percentage number of years – precipitation less than 12 inches



Source: D. J. Flower

drought and an agricultural drought Chin defined the latter as beginning when "vegetation can no longer obtain water from the soil rapidly enough to replace that lost to the air by transpiration," in other words an agricultural drought really only begins when the soil moisture is exhausted (1978:69).

Gibbs and Maher (1967) stated that rainfall is the best single indicator of drought, although they agree that drought will vary with the nature and intensity of the land and the water use. Chakravati reasoned that "since there is no universally agreed definition of drought, and since the availability of water for farming in the prairie is largely dependent on precipitation," precipitation amounts will be the logical ones to use in attempting to determine drought (1976:95). In supporting this view Ripley stated that "since precipitation is the dominant fresh-water input to the biosphere, meteorological drought usually precedes, and is the originating cause of, all other categories of drought" (1988:1).

There is no official definition of drought from a provincial perspective in Alberta. The decision about what constitutes a drought and thereby when provincial funding is required as a form of relief is left to the provincial politicians (Dzikowski,1992).

In the context of southeast Alberta since the arrival of the white settlers, drought can never be viewed merely as a meteorological phenomenon. It has been "a cultural phenomenon woven into the economic and social fabric" of the society (Dando,1977:198). It is a phenomenon to which farmers have had to adapt to survive and it is important to assess the impact of drought conditions on those farmers over time (Bennett,1990; Cronon,1992). According to Chin "unsatisfactory distribution of precipitation throughout the year for crop germination and crop maturing may be as effective a factor in causing drought as a shortage in total amount. Timely rainfall can terminate an agricultural drought" (1978:69).

One of the more successful procedures that has been developed to measure drought was devised by Wayne C. Palmer in 1965. Its success is based on taking into account the normal weather for each area (Felch,1978). Variously called the Palmer Index, the Palmer Drought Index, or the Palmer Drought Systems Index (PDSI),[25] the procedure "treats drought severity as a function of accumulated weight differences between actual precipitation and the precipitation requirement [of the land for agricultural production]" (Fieldhouse and Palmer,1965:4). Provided that any single location can have at least a 30 year period of meteorological records a monthly PDSI can be calculated. Only two locations in the study area have such continuous records and they are Medicine Hat and Manyberries. Figure 16 shows the PDSI for Medicine Hat from 1890 to 1960. The figure shows two "moderate drought" periods in the 1940s, 1943 to 1945, and 1948 to 1950 and one period classified as "much wetter than normal" from 1951 to 1954.

Figure 17 shows for Medicine Hat the two decade period of the study in more detail with monthly PDSI figures. This graph shows that a period of "moderate" to "severe" drought occurred between July 1943 and June 1944, and a second one, though less severe, between October 1948 and November 1949. If the average wheat yields as recorded at the Alberta Wheat Pool elevator in Medicine Hat are superimposed as in Figure 18, the relationship between precipitation, or the lack of it and crop yield becomes even more apparent. The average wheat yield over the 20 year period was 15.5 bushels per acre. During the 1943–45 drought period yields were six bushels in 1943, four bushels in

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[25] The term Palmer Drought Systems Index (PDSI) is the one used by Climate Adaptation Branch of Environment Canada and is the term which will be used in this research.

1944 and three bushels in 1945. Similarly for the 1949–50 dry period yields in those two years were five and seven bushels per acre respectively.

Figure 19 shows the PDSI for Manyberries during the twenty years from 1940 to 1960. Although the two major dry periods corresponding to those on the Medicine Hat graph are evident here too, there are many more short dry spells reflected in this graph than are found in the Medicine Hat one. Where, on the Medicine Hat graph, over 39.0 percent of the months show an index of below normal (94 out of 240), in the case of Manyberries, that figure is 60.0 percent (144 out of 240). In the case of wheat yields, from Alberta Wheat Pool figures from the Manyberries elevator, in only two years between 1943 and 1951 did yields reach double figures, in 1946 when 12 bushels per acre were harvested and in 1948 when the yield was 10 bushels per acre. Figure 20 shows the details of the wheat yields in and around Manyberries.

5.5 Relationship through time

Temporally there was some slight moderation in precipitation patterns particularly in the 1960s. Figures 21 and 22 show the precipitation figures for Medicine Hat from 1890 to 1985 using actual annual precipitation amounts (Figure 21) and a five year running average (Figure 22). The period highlighted, from 1931 to 1960, shows that 18 of the 30 years had precipitation amounts which were above the 95 year average of 13.2 inches. These figures are more significant if they are broken down by decades, as in Table 6.

Figure 16 Palmer Drought Systems Index, Medicine Hat 1890–1960

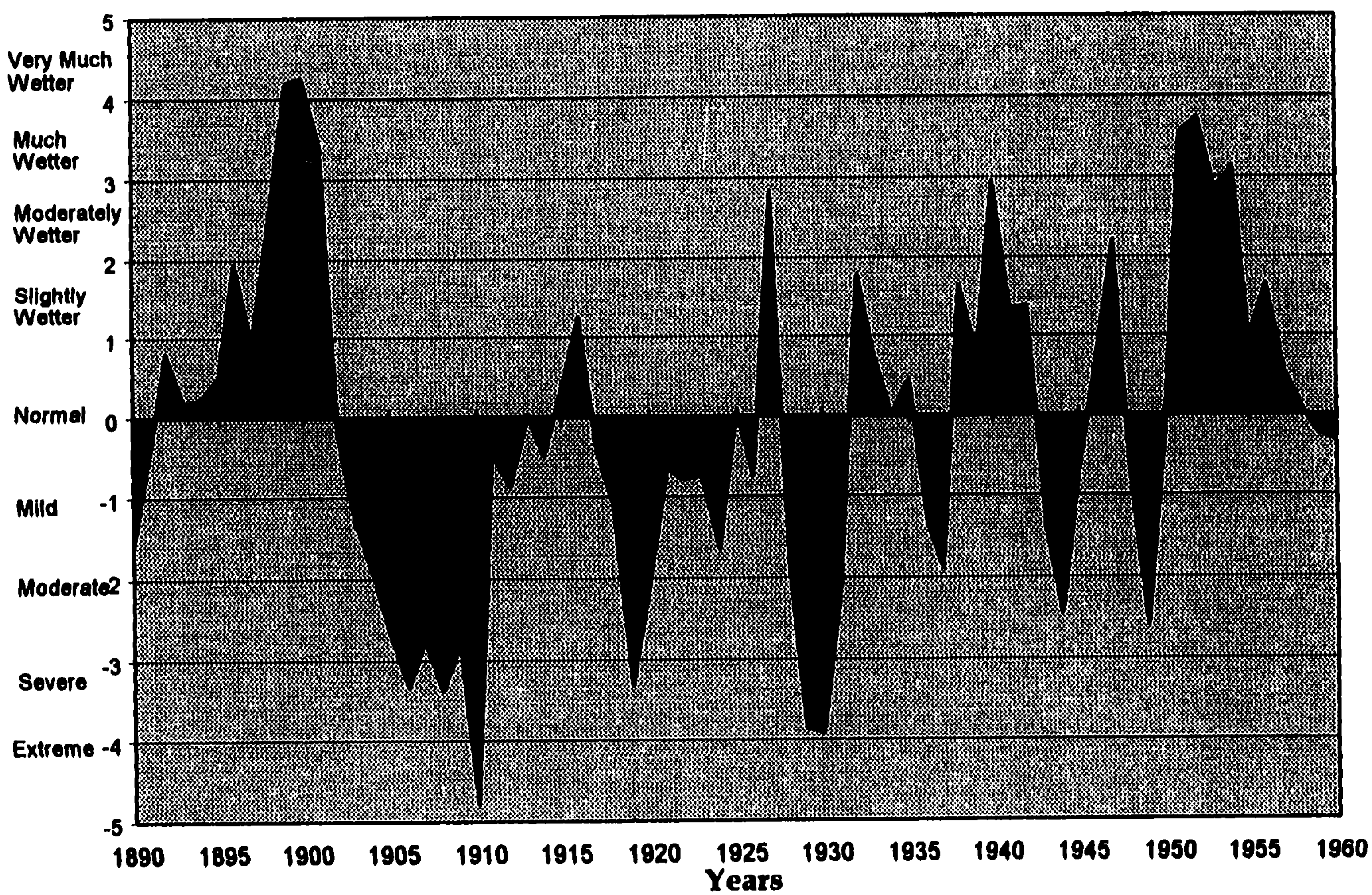


FIGURE 17

MEDICINE HAT - AUGUST 1939 TO JUNE 1960
PALMER DROUGHT SYSTEM INDEX

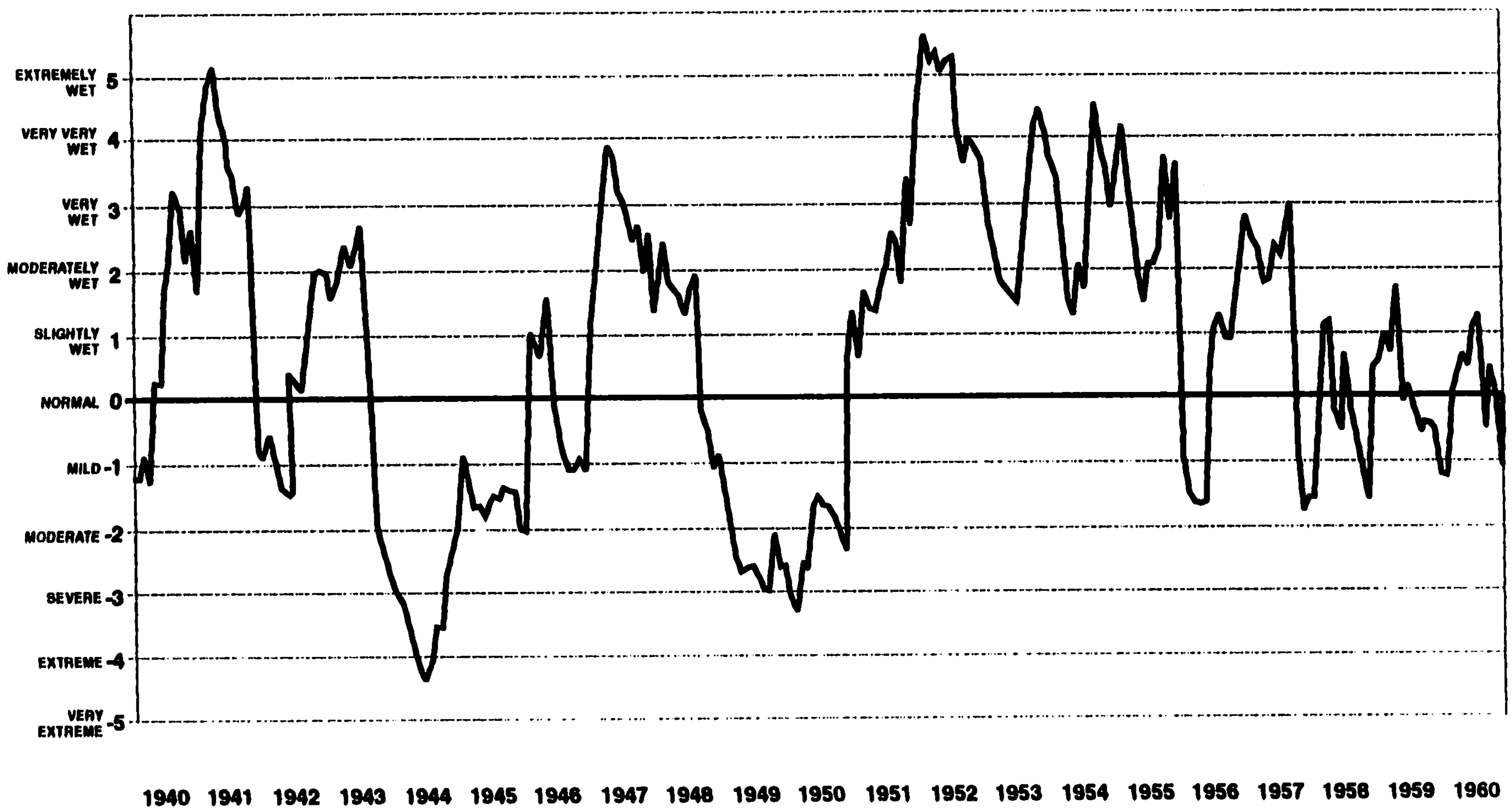


FIGURE 18

ANNUAL YIELDS PER ACRE OF WHEAT SUPERIMPOSED ON THE PDSI FOR MEDICINE HAT 1939 - 1960

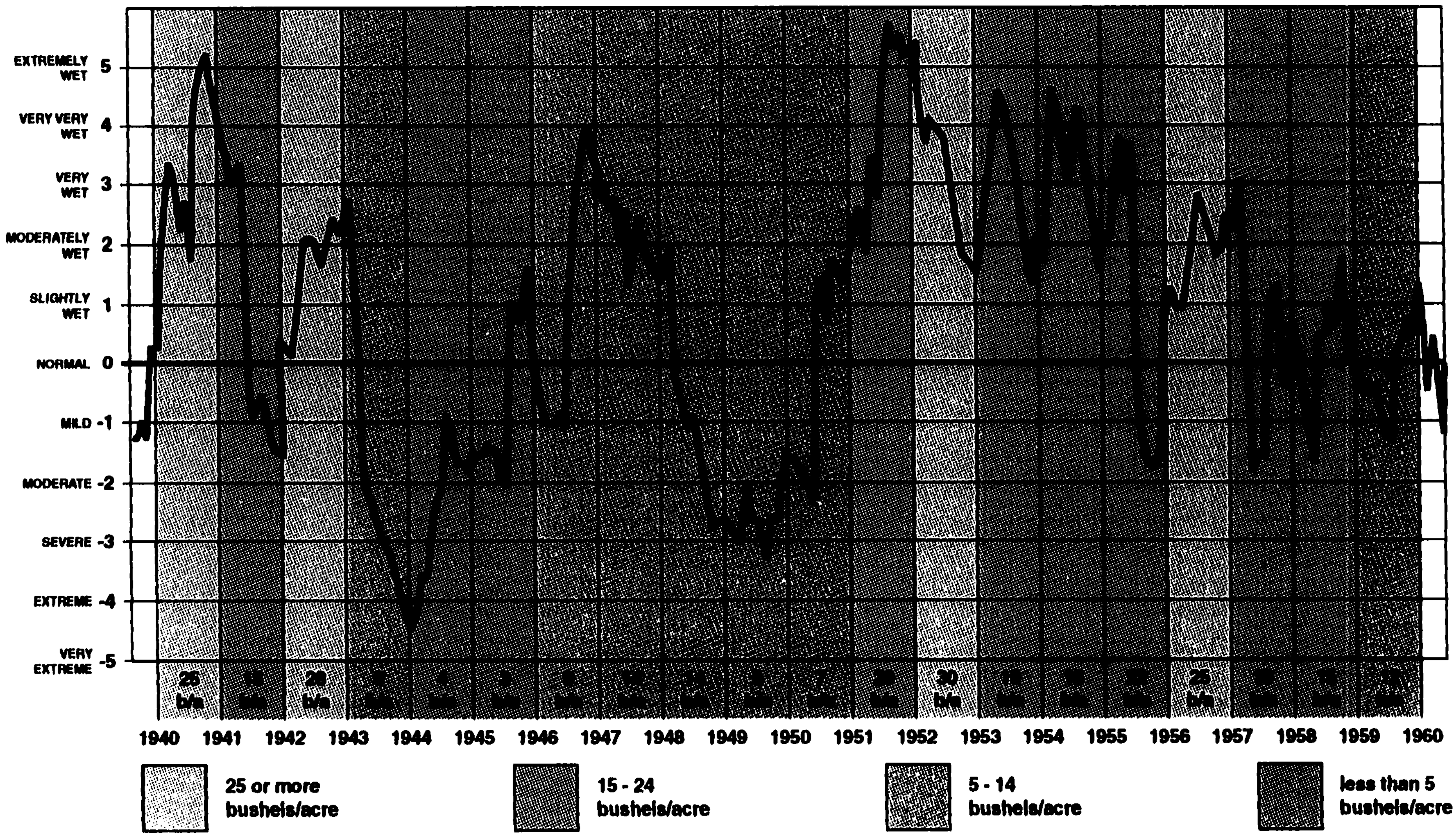


FIGURE 19

MANYBERRIES - AUGUST 1939 TO JUNE 1960
PALMER DROUGHT SYSTEM INDEX

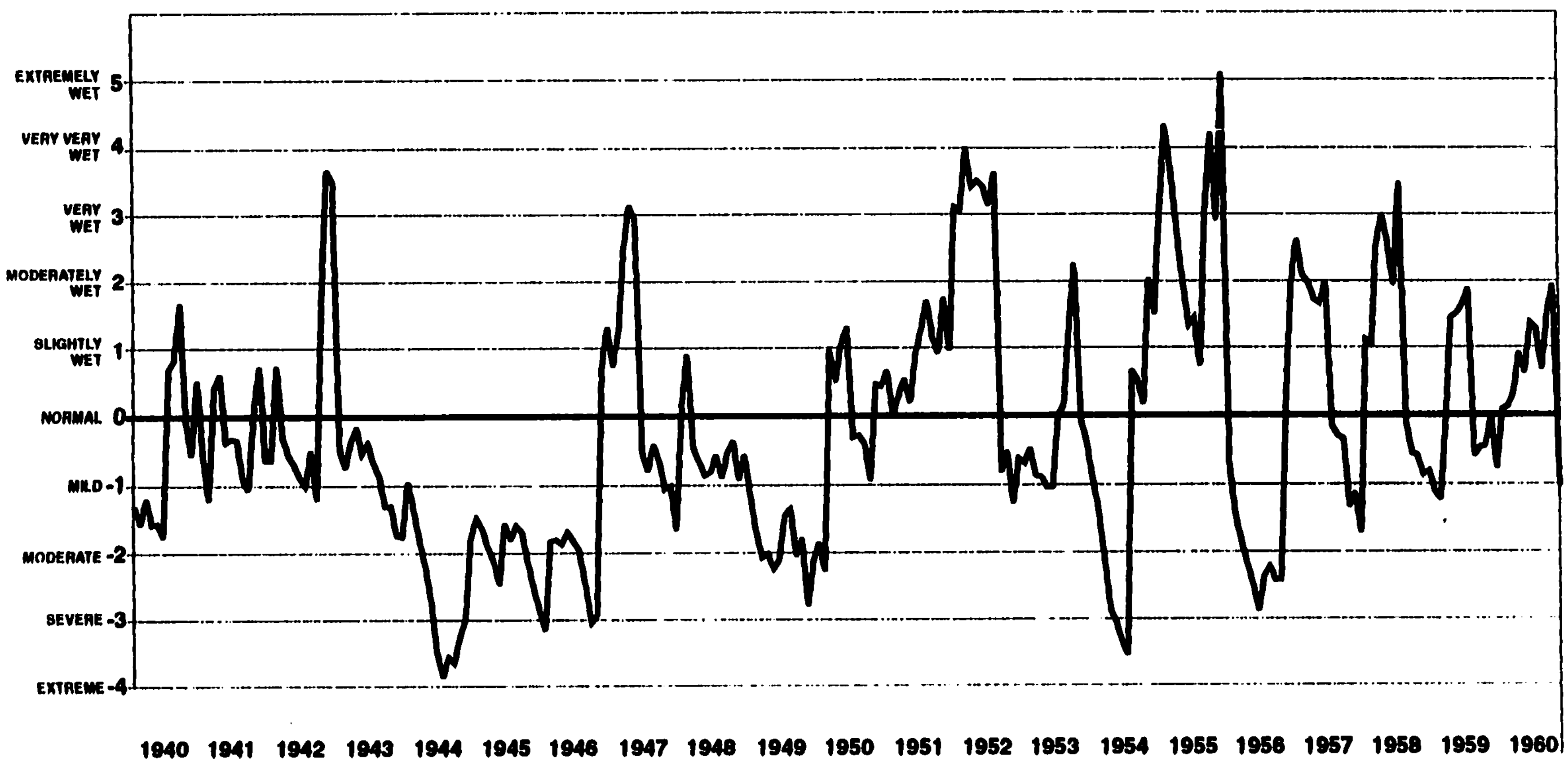


FIGURE 20

ANNUAL YIELDS PER ACRE OF WHEAT SUPERIMPOSED ON THE PDSI FOR MANYBERRIES 1939 - 1960

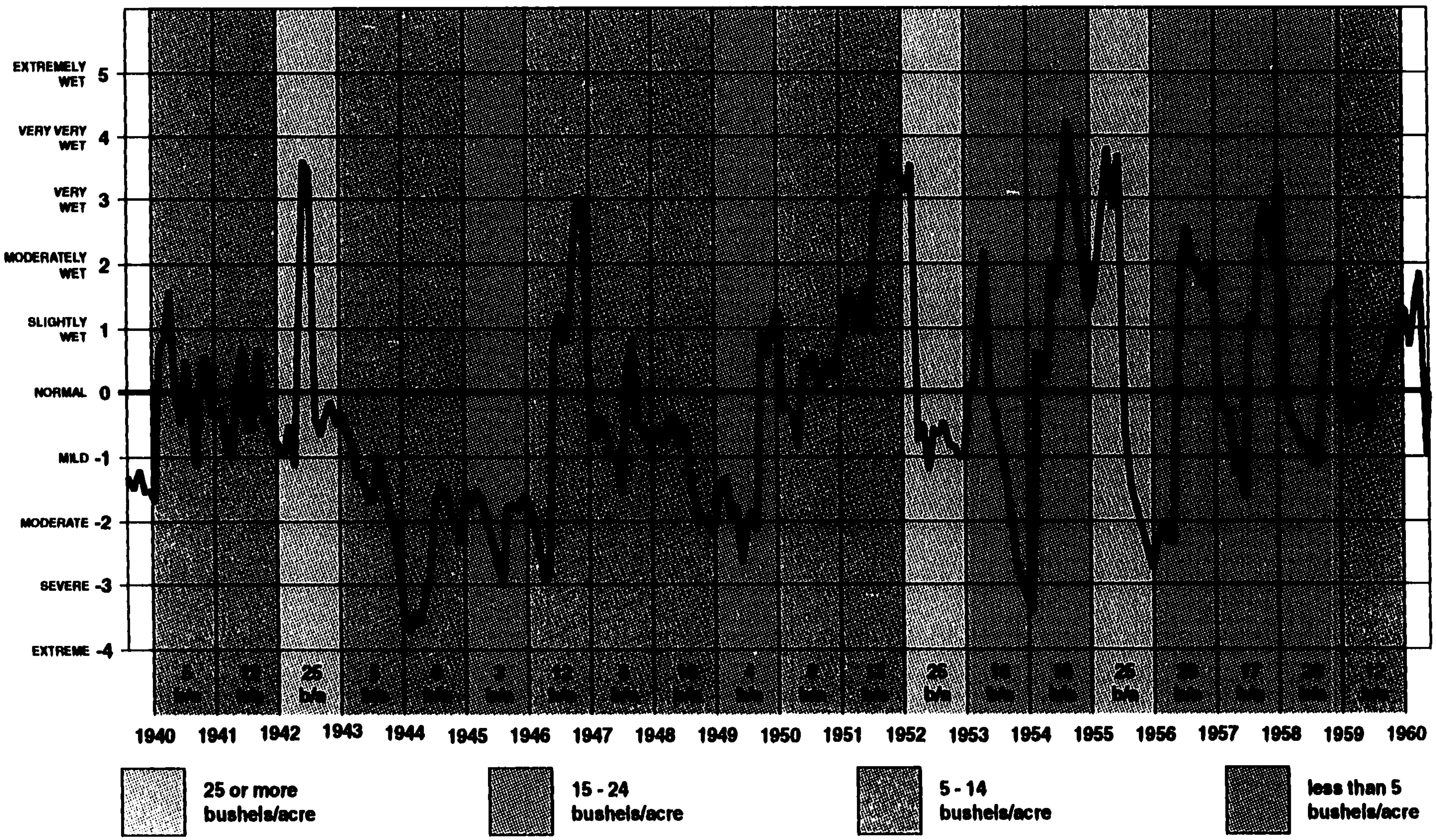


TABLE 6: Number of years with precipitation above or below long term average (Medicine Hat)

	Number of years below 13.20"	Number of years above 13.20"
1931-1940	4	6
1941-1950	6	4
1951-1960	2	8

Source: Climate Data, Alberta Agriculture, June 1990

Interestingly there were more years with precipitation below the average in the decade of the 1940s in Medicine Hat than there were in the so-called "dirty thirties." Also in eight consecutive years from 1951 to 1958, Medicine Hat had precipitation that was above the long term average, ranging from a high of 23.39 inches in 1951 to 13.40 inches in 1957. Figure 21 shows a precipitation peak during that period that was only exceeded during the period from 1896 to 1902. From these figures it would be correct to suggest that improved precipitation amounts over the six years from 1951 to 1956 may well have been one of the factors that contributed to the success of the dryland farmers.

5.6 Regional variations

Although the precipitation figures for Medicine Hat have been used throughout this chapter as apparently representing the whole study area, it is very important to point out the diversity in the distribution of precipitation, and perhaps even temperatures, within the region. To illustrate this diversity four stations in addition to Medicine Hat have been selected (Figure 23). The locations of stations along a north-south axis were fairly straightforward as there were two stations that had continuous records over the two decades concerned within the study area. The north-south axis then comprised Jenner in the north, Medicine

Hat in the centre and Manyberries in the south. The east-west axis was more difficult to determine. To get continuous records it was necessary to go outside the region at both ends of the axis. Brooks in the west lies within the Eastern Irrigation District and, therefore, outside the study area, though within 60 miles of Medicine Hat. In the east Maple Creek is in Saskatchewan but is the closest location to the east of Medicine Hat that could be used.

Correlations were calculated first using annual temperature statistics. A high degree of uniformity was assumed and indeed was found. Over the 20 year period from 1941 to 1960 the correlations with Medicine Hat were, Brooks (west) 0.81, Maple Creek (east) 0.99, Jenner (north) 0.84 and Manyberries (south) 0.97. Such results would suggest a fairly uniform temperature pattern over the whole study area with a slightly lower correlation associated with the irrigation area to the west.

The annual precipitation figures, however, show a quite different picture. Figure 15 suggests variations in precipitation patterns throughout the region and this pattern is borne out by the correlation of annual precipitation figures between 1941 and 1960. The correlations between the four stations and Medicine Hat show the following results, Brooks (west) 0.78, Maple Creek (east) 0.89, Jenner (north) 0.65 and Manyberries (south) 0.77. These figures suggest that there is a wider diversity of precipitation patterns north/south than there is east/west. Because of the particular importance of precipitation in determining crop yields, it is worth looking at monthly precipitation correlations to see just how wide the divergence in precipitation is between Medicine Hat and the other stations. Simply stating that the Medicine Hat area receives an average precipitation of 13.20 inches in any one year masks a quite different picture from a dry farming point of view.

The monthly correlations have been tabulated for convenience in Table 7 and Figure 24. The variations over the region are significant.

Table 7 reveals that in 20 of the 21 years from 1940 to 1960 at least one of the four stations had a correlation with Medicine Hat that was below 0.75 and that in one-third of the years (seven out of 21) at least one station had a correlation that

TABLE 7: Annual correlation coefficients of monthly precipitation figures with various locations and Medicine Hat, 1940–1960.

Year	Manyberries	Jenner	Brooks	Maple Creek
1940	0.29	0.59	0.62	0.95
1941	0.84	0.52	0.83	0.94
1942	0.93	0.73	0.81	0.77
1943	0.28	0.46	0.36	0.64
1944	0.76	0.91	0.73	0.62
1945	0.52	0.74	0.80	0.71
1946	0.49	0.90	0.90	0.96
1947	0.93	0.91	0.94	0.82
1948	0.59	0.81	0.85	0.84
1949	0.63	0.83	0.76	0.59
1950	0.48	0.90	0.78	0.68
1951	0.95	0.29	0.92	0.95
1952	0.72	0.90	0.81	0.79
1953	0.89	0.74	0.78	0.88
1954	0.72	0.75	0.83	0.87
1955	0.79	0.47	0.74	0.65
1956	0.91	0.93	0.69	0.60
1957	0.41	0.47	0.27	0.57
1958	0.76	0.65	0.59	0.87
1959	0.89	0.84	0.52	0.87
1960	0.67	n/a	0.69	0.86

Source: Climate Data, Alberta Agriculture, June 1990

Figure 21 Medicine Hat Annual Rainfall

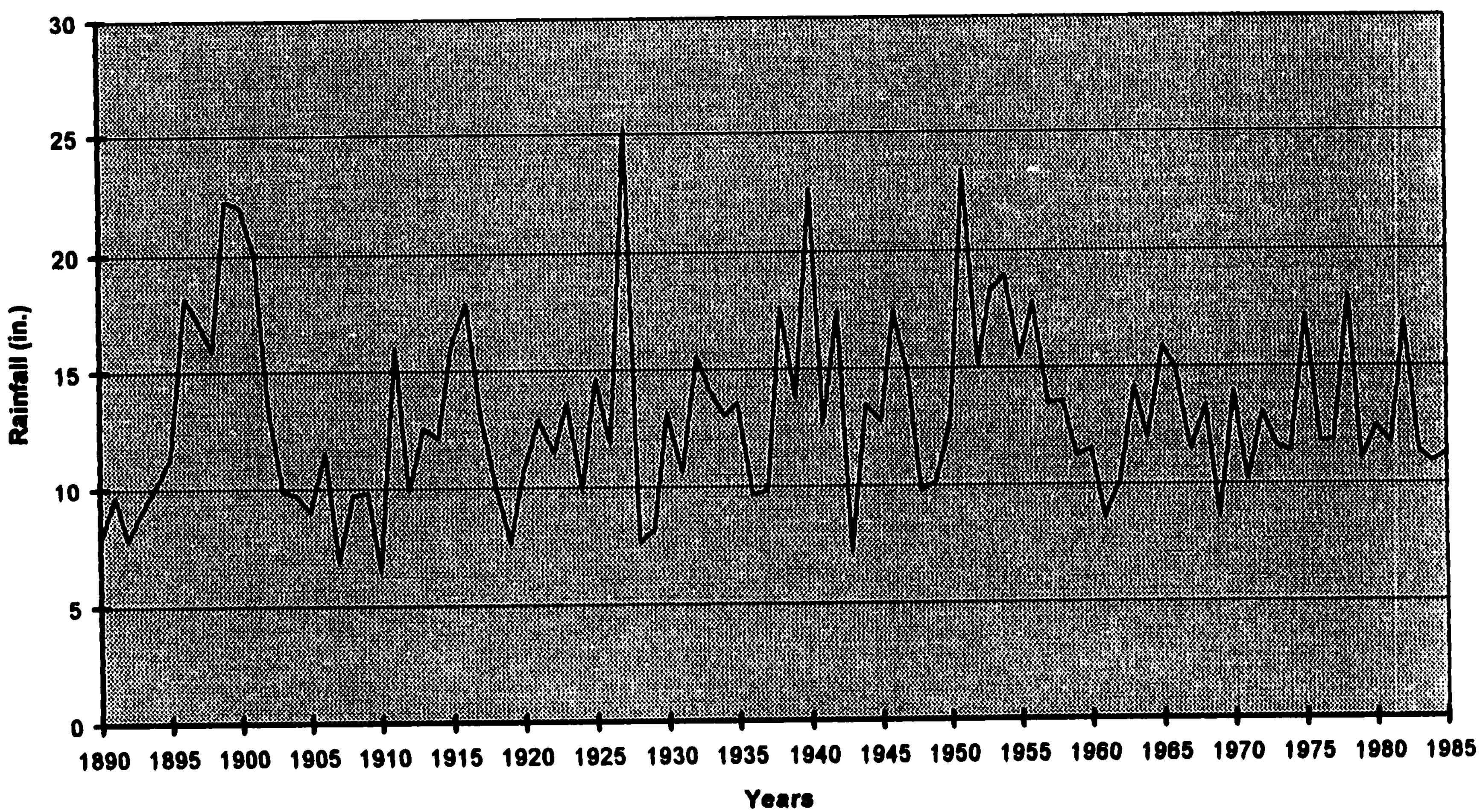


Figure 22 Medicine Hat Rainfall - Five Year Moving Average

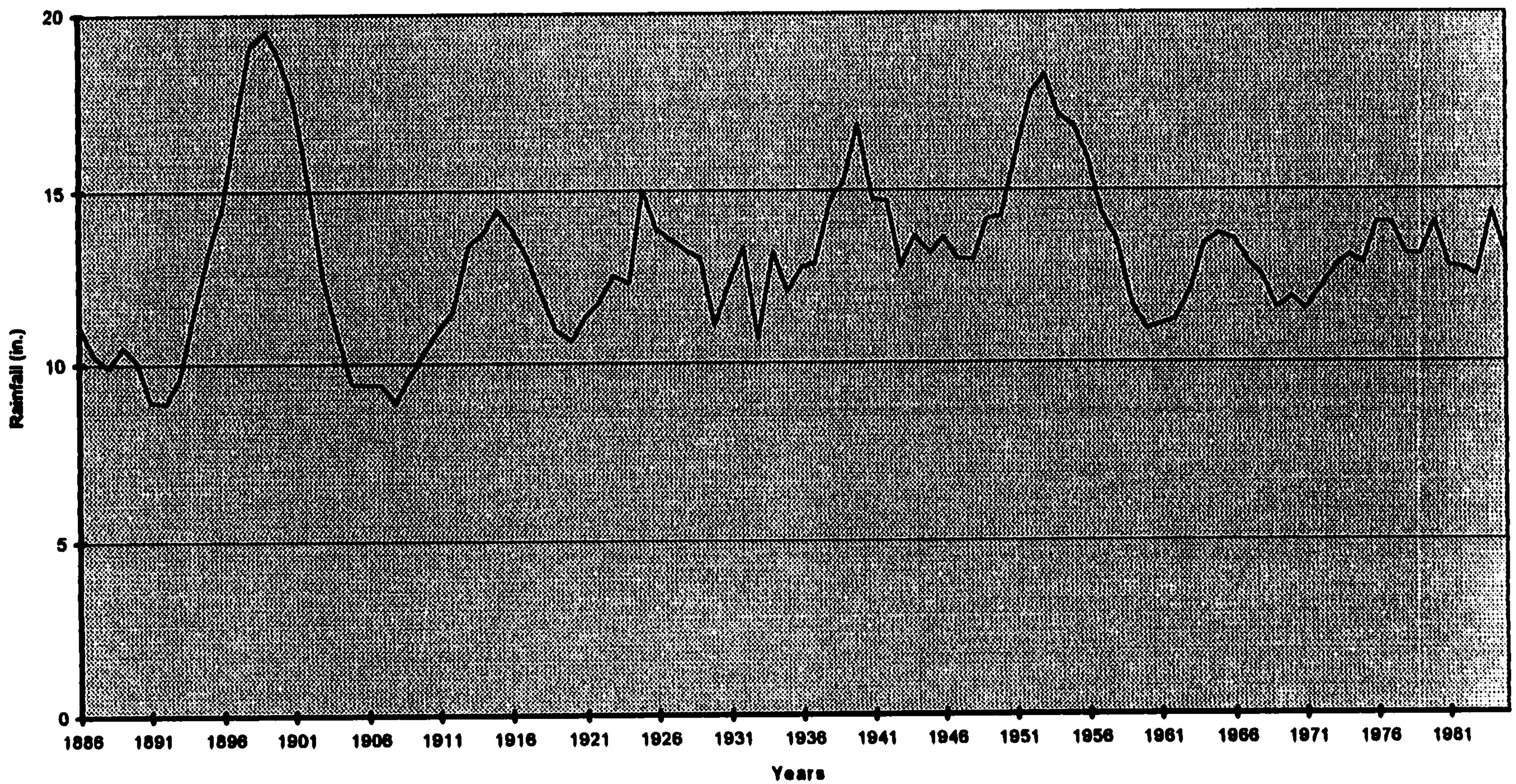
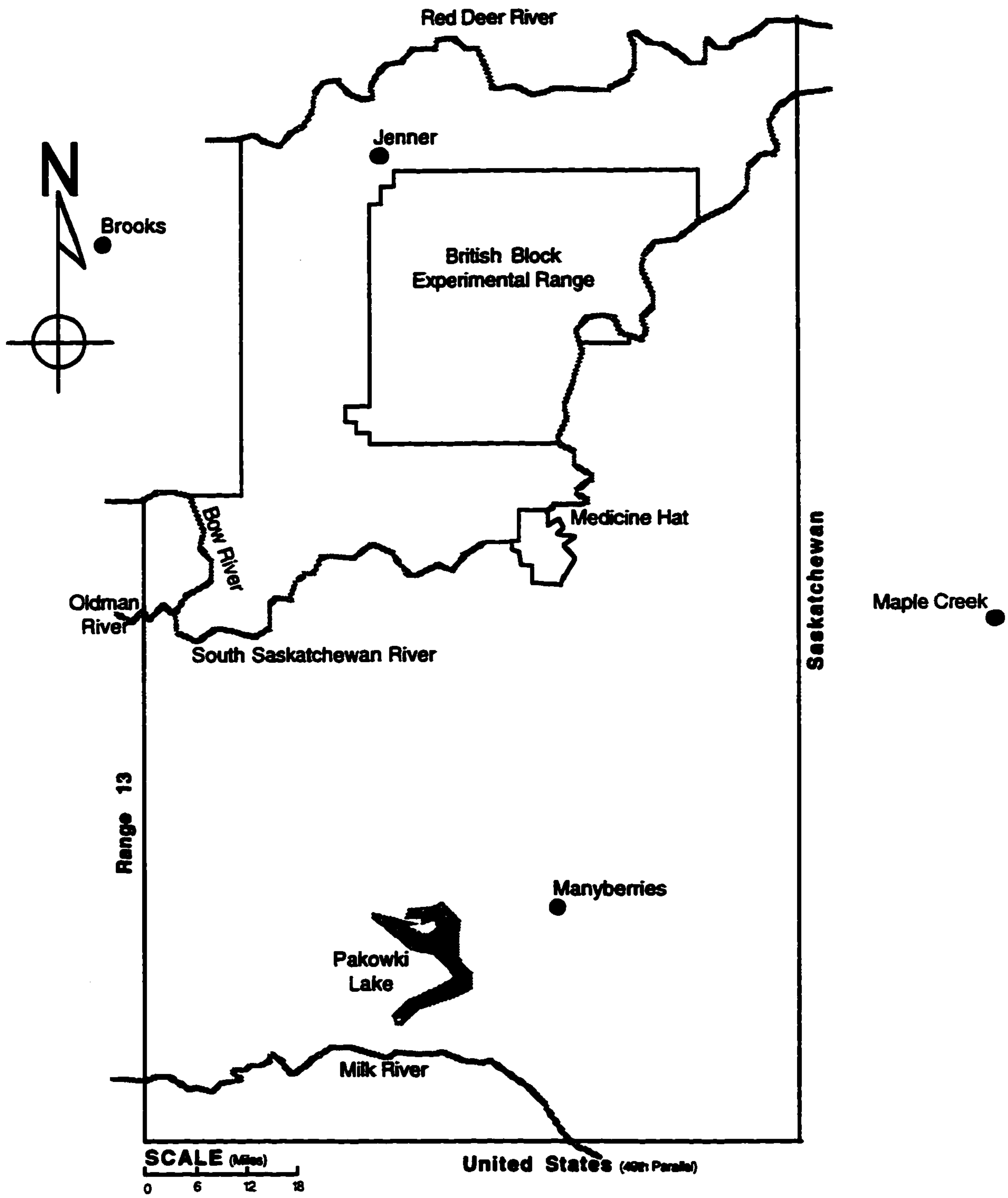


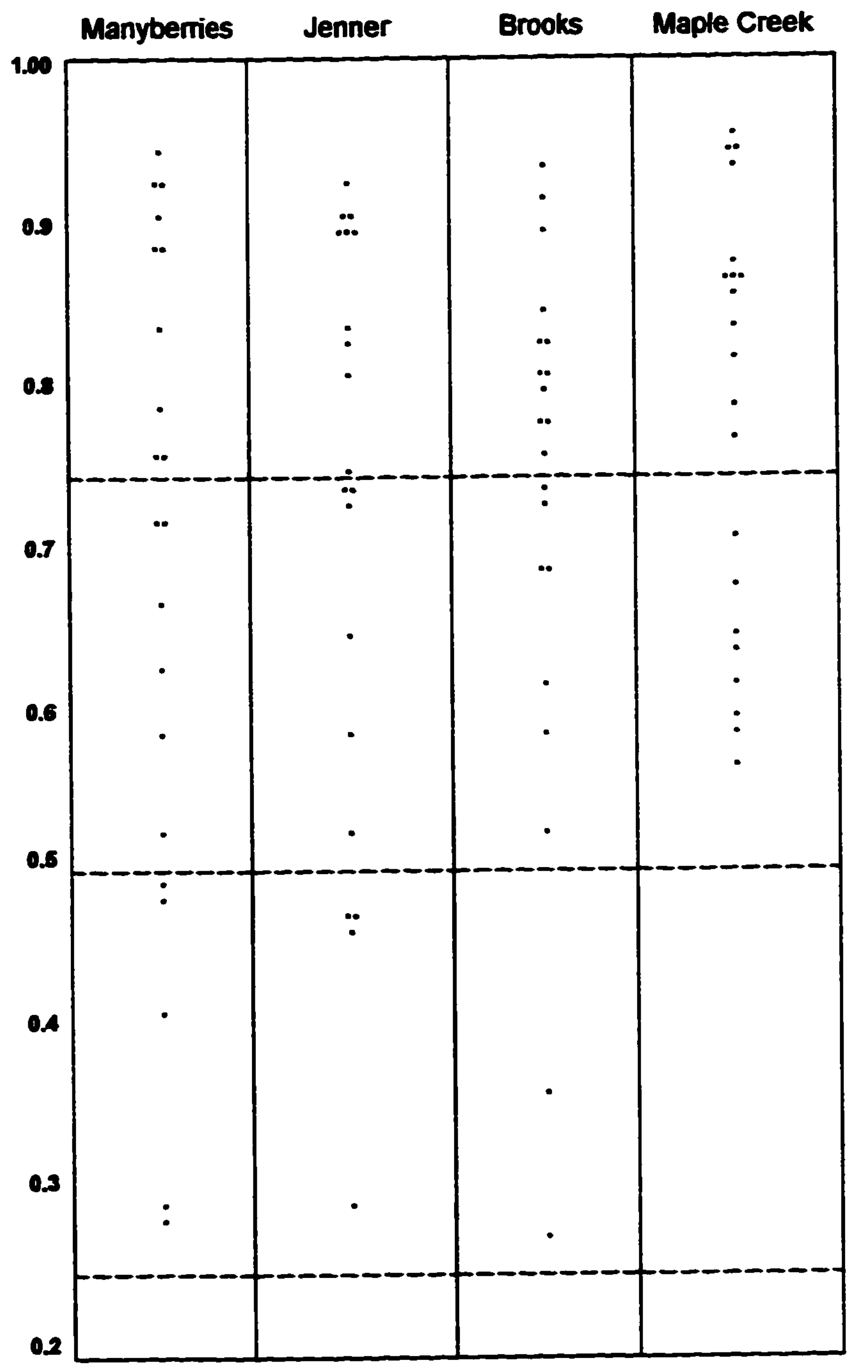
Figure 23 Location of five selected stations for regional weather variations



was less than 0.50. The graph which shows a distribution of the correlations confirms that any significant diversity in precipitation occurs north/south through the region rather than east/west, with Manyberries showing five of 21 years with correlations of less than 0.50, and Jenner with four of 21 years less than 0.50. By contrast on the east/west axis Brooks shows only two of 21 years below 0.50 correlation and Maple Creek shows none.

These variations in precipitation across the region would suggest a variety of different conditions for crop growing and these conditions need more investigation. The question of when the precipitation occurs and its consequent impact on crop yields is interesting. Most of those questioned believed that it was spring and early summer precipitation that had the most direct impact on crop yield though a number did suggest that the impact of fall moisture on early germination was also important. A study in the brown soil zone of southeast Alberta and southwest Saskatchewan by the Swift Current Experimental Station released in 1950 looked specifically at the effect of the depth of moisture at seeding time on yields of wheat. The summary of some 224 field tests of moisture depth over a twelve year period is summarized in Table 8. The clear indication from the study by Janzen and Korben (1950) is that whatever the average precipitation in the three growing months, soil moisture can have a marked effect on the wheat yield; the deeper the soil moisture, the better the wheat yield. What it does not take into account is the significance of when the precipitation actually falls.

Figure 24 Distribution of Correlation coefficients with Medicine Hat 1940–1960



The question still remains then whether monthly figures alone give an accurate picture of the effect on the crop yields or whether the distribution of that precipitation through the month can have an impact. In order to indicate the reliance on timely precipitation the following information was gleaned from the regional reports appearing sporadically in Medicine Hat Daily News for 1942. Three locations have been chosen, selecting a north/south line through the study area, since the precipitation correlation north/south was the more significant of the two. The three locations are Empress in the north, Medicine Hat in the centre and Manyberries in the south (Figure 25). The accompanying monthly figures show temperatures and precipitation for each of the three locations (Figures 26, 27, 28, 29).

TABLE 8: Field tests of soil moisture and crop yields

Depth of moisture soil in inches	Rainfall less than five inches (May, June, and July)			Rainfall more than five inches (May, June, and July)			All records		
	No. of records	Average rain	Yield per acre	No. of records	Average rain	Yield per acre	Total records	Average rain	Yield per acre
0 – 20	27	3.59"	4.5	31	6.37"	8.1	58	5.08"	6.4
21 – 27	20	3.54"	7.1	20	7.25"	13.6	40	5.40"	10.3
28 – 33	11	3.89"	9.2	15	6.63"	17.3	26	5.47"	13.7
34 – 39	14	3.82"	12.2	13	6.60"	17.5	27	5.16"	15.8
40 – 45	5	3.68"	13.5	15	7.07"	21.4	20	6.22"	19.4
over 45	23	3.42"	17.7	30	7.34"	22.3	53	5.64"	20.3

Source: Janzen and Korben, 1950

Figure 25 Map showing locations of Empress, Medicine Hat and Manyberries

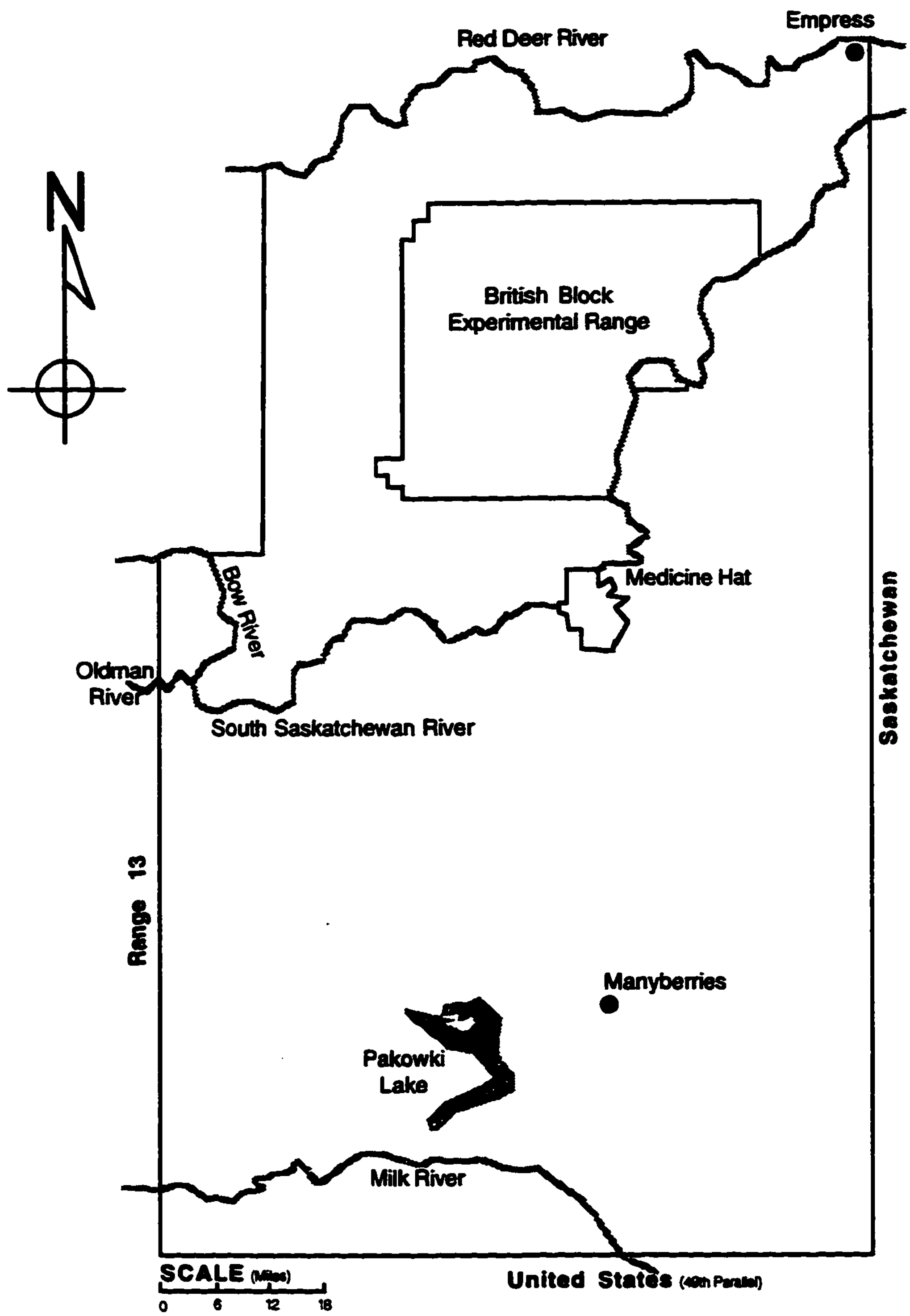
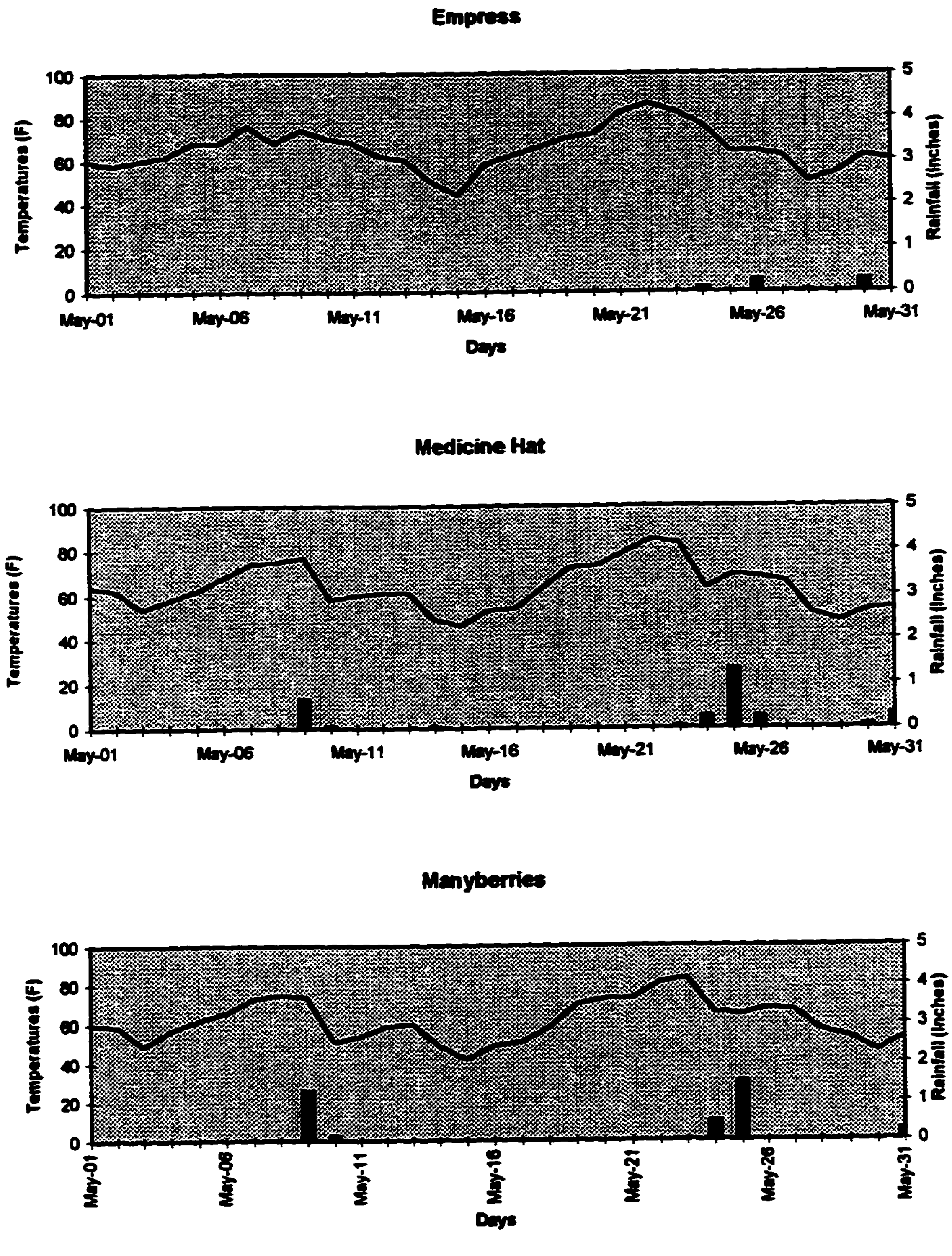


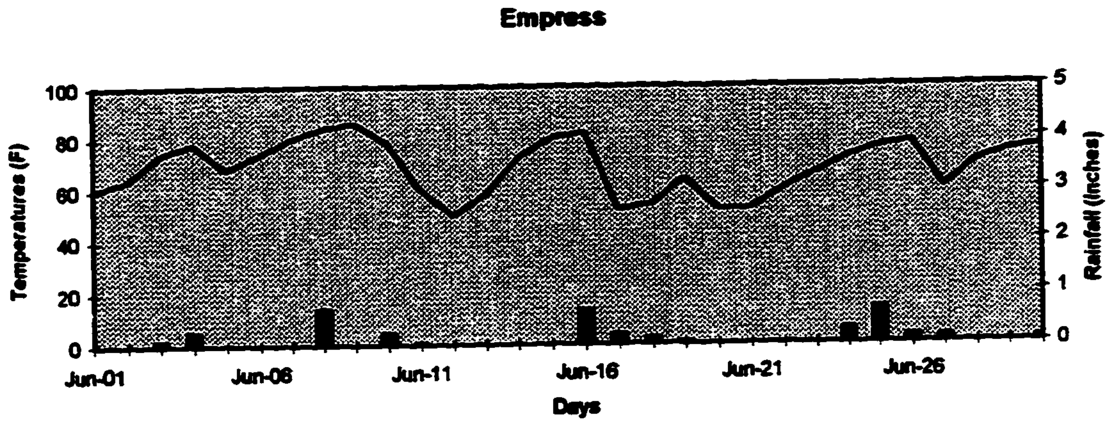
Figure 26 Daily Precipitation and Temperature—May 1942

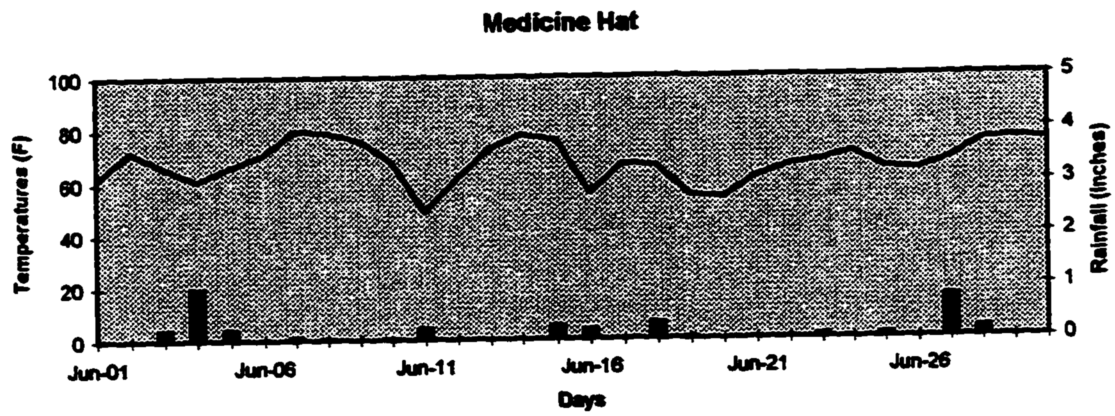


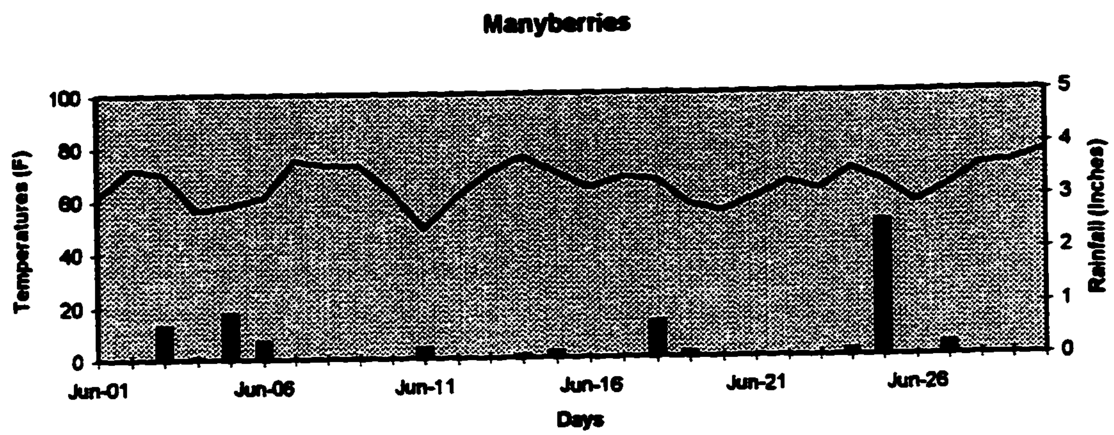
Date	Comments from the Medicine Hat Daily News	Precipitation Information
May 1	Sub-soil moisture content deficient	
May 3	Seven Persons-rain very welcome-small amount of moisture will help, but a little	No rain is recorded in any of the three stations
May 4	Without rain soon the situation will become serious	
May 8	The much hoped for rain is still to be hoped for–the water supply at present is lower than it has been for at least the past 16 years	
May 10	Farmers happy–farmers across the drought belt of southeastern Alberta wore a smile today for the first time since spring seeding began–only light rains northwards	Manyberries received 1.3" rain, Medicine Hat 0.67", and Empress received no rain.
May 11		A further 0.15" rain in Manyberries, less than 0.1" in Medicine Hat
May 14	Light snow	Less than 0.1" in both Medicine Hat and Manyberries
May 24	Heavy precipitation–a drenching rain–crop prospects for the area took	Just under 0.5" in Manyberries, about 0.25" in Medicine Hat, and 0.1" in

	on a more cheerful note! Prairie land and farmland in the district had been described by farmers and ranchers as the driest in 40 years.	Empress
May 25		1.5" rain in Manyberries, over 1.3" in Medicine Hat, and only a trace in Empress
May 26	Seven Persons–a very beneficial rain–badly needed after two days of intense heat and wind which dried up the very little moisture that was in the soil	No rain in Manyberries but 0.25" in Medicine Hat and the same in Empress
May 28		Empress receives a trace of precipitation
May 30		0.25" of rain in Empress and less than 0.1" in Medicine Hat
May 31	Additional heavy rains further brightened the 1942 crop picture	All three locations had a further 0.25 to 3.0" of rain

Figure 27 Daily Precipitation and Temperature—June 1942





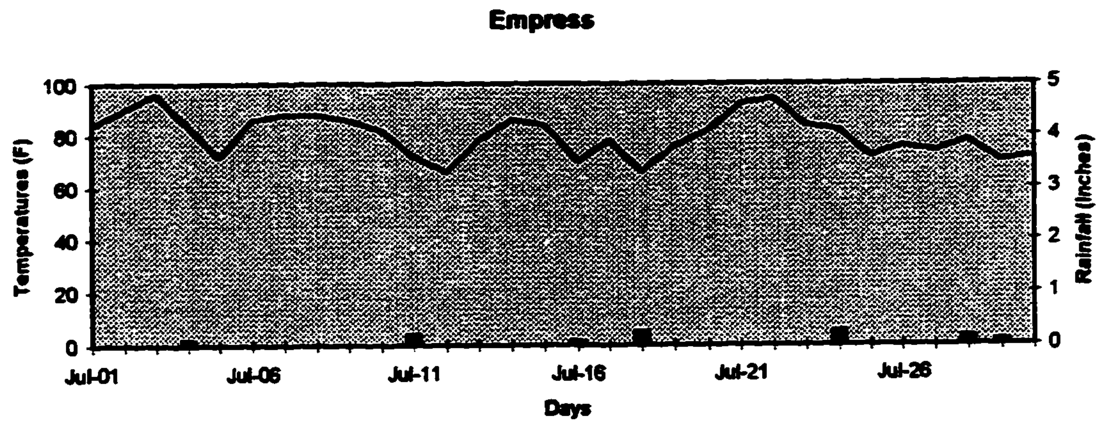


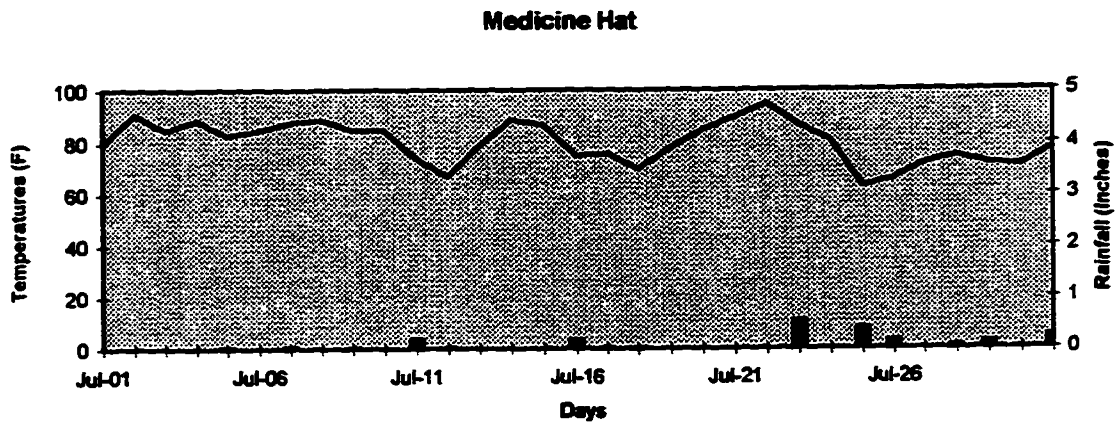
Date	Comments from the Medicine Hat Daily News	Precipitation Information
June 1		Trace of rain in Medicine Hat
June 3		0.7" of rain in Manyberries, 0.2" in Medicine Hat, 0.1" in Empress
June 4	Adequate moisture in district–will suffice for at least three weeks–Hilda/Schuler area, where recent rainfall has been much lighter, is the one exception	1.0" rain in Medicine Hat and 0.27" in Empress
June 5		0.9" rain in Manyberries, 0.2" in Medicine Hat
June 6		0.36" rain in Manyberries
June 7		Trace of Rain in Medicine Hat
June 8	Good rainfall in Schuler area–very much needed to start the last sown grains	Trace of rain in Medicine Hat, 0.7" in Empress
June 9	The southeast is under water	Trace of rain in Manyberries
June 10		Trace of rain in Medicine Hat, just over 0.2" in Empress
June 11	Schuler–good shower of rain–prospects for 1942 crop are good right now	0.2" of rain in Manyberries and Medicine Hat, a trace in Empress
June 12	Wheat reported to be in	

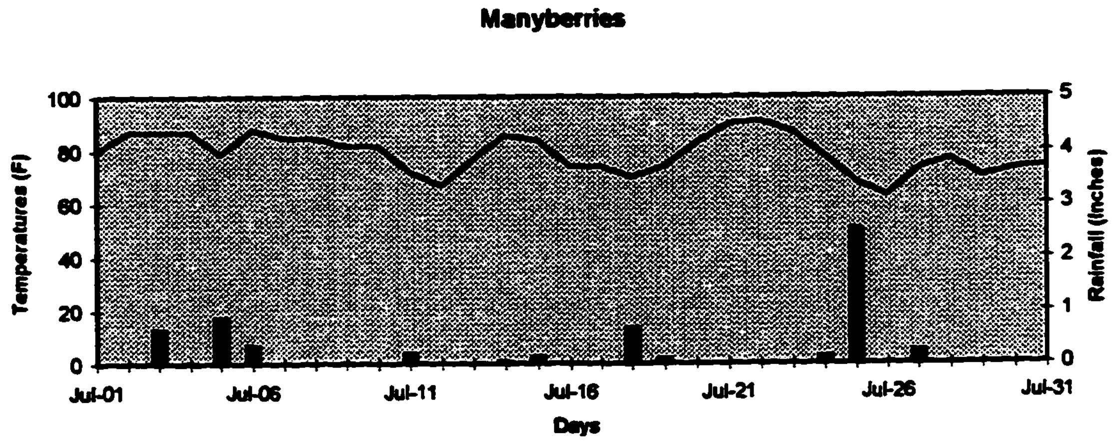
	good to excellent condition	
June 14		Trace of rain in Manyberries
June 15		0.15" rain in Manyberries and 0.3" in Medicine Hat
June 16		0.2" of rain in Medicine Hat and 0.68" in Empress
June 17		0.2" of rain in Empress
June 18		0.7" in Manyberries, 0.3" in Medicine Hat, and 0.15" in Empress
June 19	Alberta Wheat Pool reports that southeast Alberta has the finest crop outlook at the present time of any part of the province–some warm weather would be welcome	Less than 0.1" of rainfall at all three locations
June 22	No worries about moisture for the crop	
June 23		Less than 0.1" rain in Medicine Hat
June 24		0.15" rain in Manyberries and 0.3" in Empress
June 25	Seven Persons ideal growing weather	2.55" of rain in Manyberries, 0.6" in Medicine Hat, and 0.7" in Empress
June 26		A little less than 0.2" rain in Empress
June 27		0.25" rain in Manyberries, 0.8" in Medicine Hat, and

		0.15" in Empress
June 28		Less than 0.2" rain in Medicine Hat
June 29	Seven Persons–what we need now is some warm weather to make the crops grow	
June 30		About 0.1" of rain in Empress

Figure 28 Daily Precipitation and Temperature—July 1942



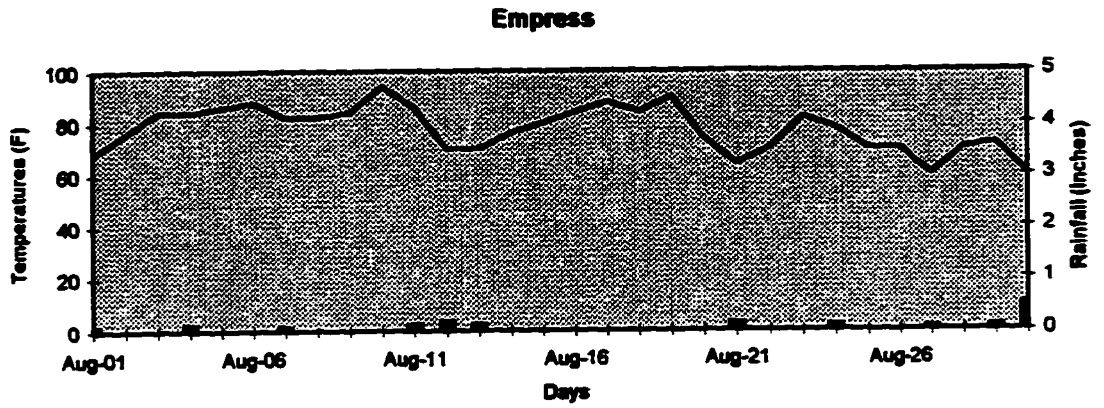


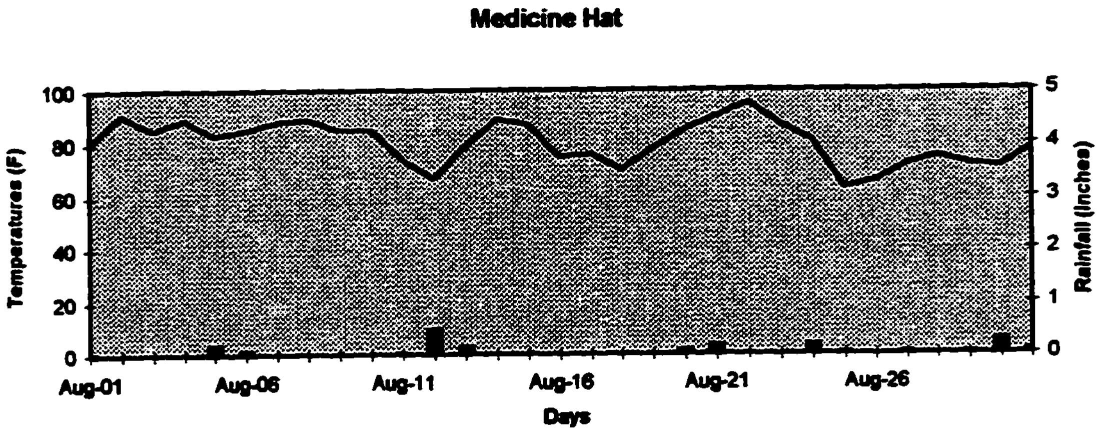


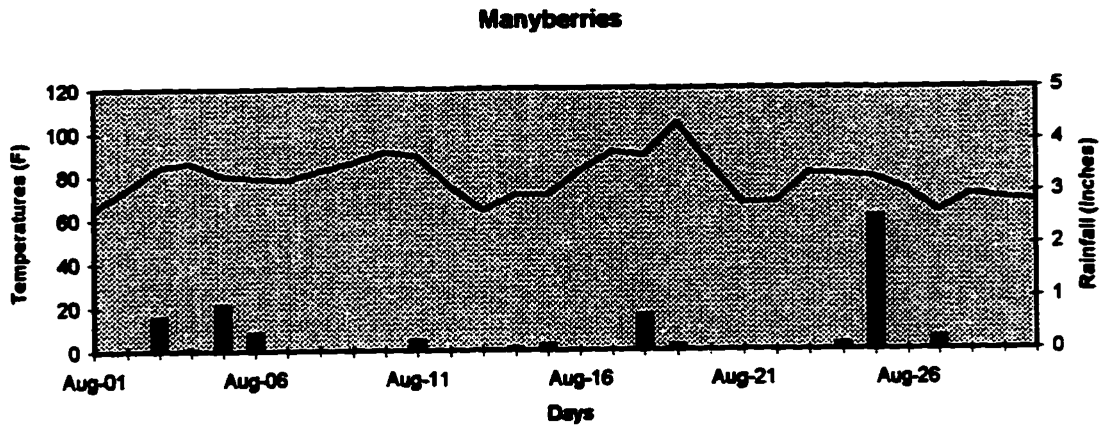
Date	Comments from the Medicine Hat Daily News	Precipitation Information
July 4		0.1" rain in Empress
July 5		0.05" of rain in Medicine Hat
July 7		0.2" of rain in Manyberries, 0.5" rain in Medicine Hat
July 9	General condition of crops is exceptionally good this year	Trace of rain in Medicine Hat
July 10		Less than 0.1" rain in Manyberries
July 11	Major wind damage–despite June rains, heat is taking its toll	0.2" rain in both Medicine Hat and Empress
July 12		0.35" rain in Manyberries
July 15		0.1" rain in Manyberries, a little less than 0.2" in Medicine Hat
July 17	General rain badly needed to fill out heads of crops	Trace of rain in Medicine Hat
July 18		0.28" of rain in Medicine Hat
July 20	Wheat fields are burning up in district–promising crops of two weeks ago are now burnt badly	
July 23		0.15" of rain in Manyberries, 0.57" in Medicine Hat
July 24	Showers and good weather have been a relief to the	

	crops but ineffectual showers in the north	
July 25	·	General showers, Manyberries 0.27", Medicine Hat 0.38", and Empress 0.28"
July 26		Manyberries 0.3" rain, Medicine Hat 0.17"
July 27	General rains brought relief–timely–if the rain hadn't come, the crops would have been the same as those of 1939 when kernels never properly filled	
July 28		0.3" rain in Manyberries, less than 0.1" in Medicine Hat, and just under 0.2" in Empress
July 29	General condition of crop fair to good–average yield estimated at 12 to 15 bushels per acre–Rose Glen wheat burning very badly–some of the fields nearly gone–crops at Schuler better	0.15" of rain in Medicine Hat, less than 0.1" in Empress
July 31		0.25" rain in Medicine Hat, 0.2" in Empress

Figure 29 Daily Precipitation and Temperature— August 1942







Date	Comments from the Medicine Hat Daily News	Precipitation Information
August 1		Trace of rain in Medicine Hat, 0.1" in Empress
August 4		0.15" of rain in Empress
August 5		0.2" of rain in Medicine Hat
August 6	Good crops in the south–20 bushels per acre Seven Persons south to Manyberries	Less than 0.1" rain in Medicine Hat
August 7		0.1" rain in Empress
August 10	Wheat returns disappointing–intensive heat has burned wheat–some yields 10 bushels per acre–others nothing–severly disappointing, if not tragic	
August 11		Trace of rain in Medicine Hat, 0.13" in Empress
August 12		0.5" of rain in Medicine Hat. 0.2" in Empress
August 13		Trace of rain in Manyberries, just under 0.2" in Medicine Hat, 0.12" in Empress
August 19	Timely rains urgently required	
August 20		0.1" rain in Manyberries and

		in Medicine Hat
August 21		Almost 0.2" rain in Medicine Hat and Empress
August 24		0.2" rain in Medicine Hat, 0.1" in Empress
August 25	Crops from Whitla to Winnifred running 25 to 30 bushels per acre–south towards [Cypress] Hills up to 30 bushels–north of Medicine Hat, crops quite late	
August 27		Trace of precipitation in Medicine Hat and Empress
August 28		0.2" rain in Manyberries
August 29		0.1" rain in Empress, trace in Medicine Hat
August 30		0.5" rain in Empress, 0.3" in Medicine Hat
August 31	Many days showery or cloudy–season about three weeks late	Trace of rain in Manyberries and Medicine Hat

There are a number of interesting lessons that can be learned from the above chronology for the growing season 1942 which certainly can be applied to the general dry farming conditions of the prairies and attitudes of the farmers. Perhaps the most obvious from the reporting in the newspaper is how quickly a wind dried or sun burned crop can be turned around by appropriate precipitation, the specific example being the change of crop assessment between May 8 and May 10. Such a rapid transformation certainly supports Chin's earlier comments that a "[t]imely rainfall can terminate an agricultural drought" (1978:69). Equally there is evidence in the reporting of what Bennett calls the "cautious," perhaps even pessimistic approach toward the crop yield (1969:235). There are occasions where the crop looks good; for example, the July 9 report reads "general condition of crops is exceptionally good this year" but by July 11 indications are that the heat is taking its toll, as the result of a sequence of 10 days with daytime temperatures in the high 80°F range. Such rapid changes in the prospects for a good crop are bound to make the dryland farmers cautious, certainly not risk-takers. The effects on the farmers of the extreme variability reflected in these newspaper reports, the absolute reliance on the weather with no opportunity to be able to control it, results in what Bennett in his conversation with J.R. Clark calls "psychological adaptation"(Bennett,1964). As Saarinen points out "even if market conditions were stabilized, there would still be a great difference in crop and pasture yields from year to year due to the wide variation in rainfall from season to season . . . truly here are conditions of great risk and dramatic uncertainty." (1966:2) This suggests that the farmers have become used to variability and tend to be almost resigned to seeing a good crop deteriorate before it can be harvested. That same resignation can be seen in the comments in the newspaper for August 10 where reference is made to "tragic" crop yields. It is an uneven cycle of success and failure that leads to this resignation. The farmer does his job, preparing the ground and seeding the crop, then he has to hand over the next phase, the success or failure of that crop, to the weather which can toy with his emotions daily before the crop is ready for harvesting. Saarinen's study of drought hazard suggests some of the personality characteristics of Great Plains farmers, characteristics which closely parallel those of the dryland farmers of southeast Alberta and which are evident in their determination to survive and farm the land (1966:104). As Sinclair Ross pointed out in his short story "A Field of Wheat,"

> [f]or the wheat allowed no respite. Wasting and unending it was struggle, struggle against wind and insects, drought and weeds. Not an heroic struggle to give a man courage and resolve, but a frantic unavailing one. They were only taunted, driven things; it was the wheat that was invincible. . . . (Francis,1989:165).

The results of the crop yields for 1942 are most interesting. In Manyberries the yields averaged out at 25 bushels an acre, twice those of any other year between 1934 and 1951. Those for Medicine Hat averaged 28 bushels an acre and those for Empress at 25 bushels per acre. Despite the occasional pessimism after planting, the wheat yield in 1942 was good throughout the whole area.

Variations in the climate during the 1940s and 1950s were within the normal pattern for the region and therefore would not explain the relative farm stability that emerged in southeast Alberta during the post-war years. The 1940s had more years below the long term precipitation average than did the 1930s and the 1950s. Indeed, 1951 to 1958 proved to be the wettest seven consecutive years in Medicine Hat since 1902. It proved to be an anomaly, however, rather than a long term change, so it is necessary to seek other causes to explain the post-war prosperity.

Chapter 6

Survival

6.1 Introduction

According to MacPherson and Thompson "when war broke out in 1939, most informed observers [of Canadian prairie agriculture] simply assumed that the main effect would be the return of $3.00 wheat" (1984:11). These prices had, after all, occurred during World War I, in May 1917, though for most of the rest of that war the prices had hovered around $2.25 to $2.45 a bushel (Fowke,1957:169–171). Such prices, however, did not materialize after 1939; indeed the price of wheat only broke the $2.00 per bushel barrier twice between 1940 and 1960, specifically in 1948 and 1949. Nonetheless, the low prices and the large accumulated surplus of wheat did motivate the government to act.

However, before looking at adaptations which changed the agricultural practices in the drylands of southeast Alberta, it is necessary to address the issue of survival.

Those who were still dryland farming in 1940 had survived many natural hazards and were prepared to bear the losses supported by the underlying belief the "next year" would produce that bumper crop which would solve all their problems

(Burnet,1951). In the "choice tree of adjustment," Burton, Kates, and White (1993) point out that one of the options is to choose change as a way to deal with the drought conditions. A brief look at the census statistics will indicate the significance of choice of change (Table 9). The statistics show that the number of occupied farms in Census Divisions (CD) #1 and #3 dropped by over 22 percent between 1921 and 1931, by 16 percent in the area south of Medicine Hat (CD #1) and by almost 39 percent in the area north to the Red Deer River (CD #3).

TABLE 9: Occupied Farms and Rural Population, 1921–1941

	1921	1926	1931	1936	1941
Census Division #1					
Number of occupied farms	4411	3377	3709	3899	4107
Rural population	17663	13491	15809	17455	16408
Census Division #3					
Number of occupied farms	3921	2118	2754	2575	2837
Rural population	13915	9075	11831	11836	12151

Sources: Census of Canada, 1921, 1931, and 1941;
Census of the Prairie Provinces, 1926 and 1936

The decrease in the number of occupied farms in both CDs is most dramatic between 1921 and 1926, 23 percent in CD #1 and 46 percent in CD #3, with a slight recovery taking place by 1931. The devastation of what Jones called "the prairie dryland disaster from 1917 to 1926" was documented in his books "We'll all be buried down here." (1986) and "Empire of Dust" (1987) and described that period of the major abandonment of the dryland in southeast Alberta. From a population standpoint the 1930s proved to be a period of slight growth in both CDs. Those who chose to change locations, to abandon the land, moved either on their own or as a result of opting to accept a program that would assist them in finding help in other parts of the province. The Relief Settlement Plan was introduced in Alberta in 1932 in order to assist selected families who would otherwise be in receipt of direct relief to settle upon the land with a view to their becoming self-supporting. Applications for such relief re-settlement had to be submitted to the Advisory Board composed of representatives of the Dominion and Provincial governments and the Colonization Departments of the Canadian Pacific and Canadian National railways. The numbers being re-settled declined significantly as employment conditions improved in the 1940s, down to only 14 in 1941 (Government of Alberta, 1942a:11). Gorman, however, describes the program as moving as many as "1,305 families and 2,216 rail car loads of settlers' effects" from the dried out areas, mainly though not exclusively north of the Red Deer River (1988:91).

The occupied farm statistics for 1931 through 1941 show that in southeast Alberta the drought, though serious, did not result in further large scale abandonment of the land. The farmers chose to bear the losses and remain on the land. Tables 9 and 10 show clearly the stability that occurred through the "dirty thirties."

TABLE 10: Farmers and Population of the Municipal Districts of Flowery Plains and Forty Mile, 1930-1939

Municipal District	1930	1932	1935	1937	1939
Flowery Plains #33					
Number of farmers	125	119	115	125	130
Total population	525	419	410	550	550
Forty Mile #64					
Number of farmers	188	N/A	215	200	225
Total population	1050	N/A	1150	1140	1150

Source: Annual Reports of the Department of Municipal Affairs of the Province of Alberta 1931-1940

Detailed statistics of population in two municipalities in CD #1, namely Flowery Plains and Forty Mile (Table 10) show an interesting pattern through the 1930s. CD #1 was subdivided into nine township blocks for census purposes, only four blocks of which were listed as Municipal Districts. The rest were Improvement Districts. Flowery Plains #33 included townships 4 to 6 and ranges 7 to 9 and Forty Mile #64 townships 7 to 9 and ranges 10 to 12. Both sets of population figures in Table 10 show that though there was some variation during the decade, by 1939 the total population and the number of farmers were both higher than they had been in 1930.

These were the farmers who in Gray's terms "fought the scorching wind, the blowing dust, the drouth (sic), hail, frost, grasshoppers and rust from one crop failure to another and never gave up" (1967:vii).

6.2 Factors affecting survival

Before examining factors affecting the survival of dryland farmers reference should be made to the quotation by Gerald Friesen referred to in chapter 2 of this thesis. In that quotation Friesen suggested that the Dominion government took a significant risk in opening up some parts of southeast Alberta to settlement. In essence he is reflecting the continuing debate, admittedly for a much smaller area, that took place as a result of the divergent reports of Palliser and Macoun. His statement, however, was significant enough to be included as one requesting comments from those responding to the survey since, as one of the interviewees suggested "I don't think that you can make blanket pronouncements and it rather annoys some of my friends some there [the Hilda area] when people do make these blanket pronouncements that nothing in the Palliser Triangle should have been settled." There is value, therefore, in assessing how those who actually farmed that land might react to such a statement.

Many of the respondents were quite brusque in their answers suggesting that it was the farmers who were taking the risks, not the government. Statements such as "the farmers were the hard workers and the risk takers," "I think it was the settlers that were taking the great risk, what was the government to lose?" and "the government was taking no risk" were common. Two respondents even suggested that the government, in hind sight, did reasonably well out of the settlement by filling unoccupied land with people who "were prepared to work and make the land the best they could" and "the move paid off handsomely." Such sentiments expressed by some farmers are perhaps best summed up by the following comment from an interview:

> I don't know about a risk for the government. I think the people who made those decisions would be pretty immune from their effects and I think that the people who came out, a lot of them, did suffer and lost their initial investment and were very bitter and disillusioned. All over that area [around Foremost and Etzikom] there were farms that had been abandoned. People had left because they could not make a go of it. But the risk wasn't to the government, the government didn't pay for that, as I see it, the individuals did.

But several of the respondents had doubts. Three came out strongly supporting Friesen's statement. Others were a little more cautious suggesting that the statement "was probably true, as a large percentage of farmers starved out" and "it was an unavoidable risk, big tracts of land were available with people wanting to make a living." Yet others suggested that though there certainly was some good land in the area "if they [the government] would have had a little better survey of it and not opened up the poor sandy parts it would have saved those homesteaders a lot of problems and heart breaks." Perhaps the most poignant comment came from a mixed farmer who returned to the area after serving in the armed forces in World War II. He suggested "yes, there were many risks.

Originally the area as we know it was overpopulated. The risk was that many settlers had sacrificed everything, including their health, before they vacated their dream farms."

The debate over the assessments made by Palliser and Macoun of the agricultural value of the land continues. In responding to Palliser's comment that "this area has no agricultural future whatsoever," only one respondent felt that Palliser was correct, if he meant that "it should have been left for ranching and sheep." This individual had started out as a dryland farmer but had moved gradually into more and more livestock and believed ranching was a more economic and suitable activity for his area, to the south and west of the British Block. Seven other respondents agreed that Palliser's assessment was partially right. Some indicated that "in a dry year it would appear so." Others suggested that since Palliser "had never put a plow (sic) to the soil . . . he lacked any significant knowledge as to productivity" and that "too many were allowed to settle . . . farmers needed a minimum of two sections to survive."

The majority, however, simply believed that Palliser was wrong; that the statement was "false", and that they "disagreed." For those who elaborated on their response the vast majority talked about good farming practices, "suitable farming methods and machinery" or "good management" being a necessary prerequisite to success. The land, they claimed, was good farming land and statements like "it will produce more grain per acre on less rainfall than anywhere in Alberta," "the land is easy to farm (no rocks) and has been very productive since mechanized methods have been used" and "a large number of people make a very good living on this land" echo through the responses. But there is also a caution, well expressed by one of the respondents. It was his contention that "the soil mainly proves quite fertile when sufficient rain or irrigation is available. The opportunity for a livelihood must be crafted to many,

many small segments in this triangle. It is not a get rich quick area raising only wheat."

The responses to Macoun's statement that this "will yet be known as one of the best wheatlands" revealed some significant reservations. Only two gave the comment unqualified acceptance and only one totally disagreed. The remainder added riders, most of which centred around an adequate moisture supply; for example, "if the rain comes at the right time there is no better farming area," or "with the right amount of rain in this area we can produce the world's best wheat and probably at the cheapest price," or "only in wet years." There is a definite feeling expressed by many that the land they farmed, given the right circumstances, grew good wheat. Statements such as "it always had produced good quality yields, not always quantity but always quality," "this [land] has grown a lot of good wheat over the years, mostly all #1 or #2 grade" and "much of the best hard wheat is grown in this area" reinforced a belief amongst the majority of those who farmed that though Macoun's statement might have been a little "overly optimistic," it nevertheless reflected what many of them felt.

So, despite this debate, the potential of the majority of the land is never really in doubt; however, for all respondents agreed that with adequate precipitation at the right time the land would produce good crops. The keys, of course, were "adequate precipitation" and "at the right time" and it is those "annual uncertainties" that created the continuing debate over the merits of the dryland farming in the area.

The 1941 Census gives some indication of the difficult circumstances facing many farmers by the time the "dirty thirties" were over. Of the 4,107 farms in CD #1, 31 percent reported mortgage debts and over 15 percent indicated liens against crops, livestock and equipment. The picture was similar in CD #3 where 27 percent of the farms reported mortgage debts and over 23 percent indicated liens. Certainly between 1936 and 1941 some farms were abandoned but the extent of the abandonment, less than one percent in each CD, was small in comparison to what happened between 1921 and 1926.

So what factors drove this will to survive? There must have been after all, motives other than economic rationality involved in the decision-making processes of those who survived (Golledge, Brown, and Williamson,1972). A former assistant district agriculturalist in the area, Mel Cameron (1994) argued that many of the dryland farmers in the southeast were short term decision-makers who believed that once they had "got the farm" they had achieved their long-term goal. Question 28 of the survey asked respondents to rank on a four-point scale from 1(not important), to 4 (very important), five reasons for staying on the land during the "dirty thirties." The individual rankings were then added together and divided by the number of respondents to decide the final rankings of the five reasons. The two highest ranking reasons were economic security (3.36), which supported Cameron's belief, and the will to succeed (3.32). Most of the respondents believed that despite failures the land provided security and that despite everything that had happened the land would produce good crops. It is this optimism about the next crop being a bumper one that led to the area being popularly referred to as "next year country."

The belief presented by Burnet (1951) "that every crop they planted might be a 'million dollar crop,'" elicited a large number of positive responses. None of the respondents disputed the statement and many suggested that farmers in the area still think that way and that "some years it turns out that way." Others showed their continuing faith in the potential of the land with statements such as "farmers have faith in the land, if catastrophe strikes this year, then we'll live for next year." Others suggested the statement reflected the "hope" on which the farming was based. Still others argued that it was part of the optimistic, positive attitude of the farmer with statements such as "there was never a more optimistic person than a drylander" or "we always had a positive outlook for the following year." There was a firmly entrenched belief that the land would produce given the right set of circumstances but equally that it was necessary to persevere, that "you have to stay at it year after year to make it go" and had to exhibit ingenuity and determination, often by gambling "with their money, their families or their lives [and] sometimes with very limited other opportunities."

Reading many of the local histories, one of the primary attractions, particularly for settlers from eastern Europe, was ownership of land. They had been encouraged to come to the west in the belief, supported by promotional, "booster," literature, that free land was available. They had heard "of virgin fertile land to be had free in Canada where fortunes could be made farming" (Hilda,1974:68). The homesteaders came "in search of land on which to build a home, a land that promised a future, a new land with freedom to expand and bring up a family" (Wiedeman,1973:21).

As one interviewee put it, referring to her father, "I never heard him say that it was a mistake [to move to the farm]. I think he thought that the land had something to give and land was a very important thing. If you had land you had something. Yes I think the land meant a great deal to him really."

Another interviewee described the Russian German people in particular who settled in southeast Alberta and southwest Saskatchewan as

> a hard working people . . . you will find that many times the Russian Germans were able to settle an area that anyone else would have abandoned. They were tough. The Russians in some places [claimed] . . . that the Germans can turn a desert into productive land . . . they were of the soil, with the soil (Grimm,1995).

A third reason listed was the belief that the farmers could not afford to leave the land (2.73), that since all their assets were tied up in land, animals and machinery it was not possible simply to move away. Besides there was pride in the ownership of the land and significant community support which tied people to the land. The final two reasons were attachment to place (2.42) and social status provided by owning land (2.03). These two reasons for staying were ranked as not very important by most of the respondents though in both cases certain individuals ranked either one more highly than the average. Reading the local histories there is little doubt that one of the initial attractions in the homesteading process had been family connections, settling close to friends or relatives or close to people of the same ethnic, and even in some cases, religious background. However, over time these were not important reasons for staying put.

A second question relating specifically to reasons for survival was question 30. In this question the respondents were asked whether there was a specific personal quality to which the survival instinct might be tied. They were given four possibilities and could mark more than one and a blank space was provided to add any additional ones. The most popular of the four listed qualities was previous experience, followed very closely by pride. By "previous experience" some meant their own or their parents' dry farming experience in North Dakota while others referred to farming in Southern Russia. As one respondent put it "Grandad farmed in Southern Russia under similar conditions." As was indicated in the introduction all but one of those surveyed and interviewed were born and raised in the area. They were raised as dryland farmers, taught the dryland farming practices by their parents, relatives and neighbours, and in the vast majority of the cases took over the original homestead and additional acquired land when their parents died, or moved off the land into town. For them previous farming experience also meant learning by practice. As one of the interviewees stated, they learned to farm "an extensive tract of land with methods you know and understand and that you have figured out how to put together." Using that knowledge may well make these individuals successful dryland farmers.

Kloberdanz, in his work on the Volga Germans, referred to "latitude pull" as a reason why immigrants are drawn to new areas that possess the same climatic features as those of their homeland (1980:61). Familiarity with the land and, to some degree, with the climate provided a definite advantage. Pride was also important, not only in owning the land but also in making it productive; it was, as one interviewee put it "my land, my roots, my space," providing a kind of spatial freedom. There was also the desire to build up a farm for future generations, of developing the land "for their sons, that they should stay with agriculture was very important." Only a few of the respondents listed ethnic background as a reason for surviving, though it was more prominent with those who had arrived later from eastern Europe, in the 1910s and 1920s, either direct or via the United States. Even fewer respondents listed stubbornness as a factor though, on reflection, the term may well have had negative connotations for some people. Under the category "other", the responses could be categorized under three headings:

(1) faith in the land, with comments such as "the opportunity was here if the economy would turn around," "I felt sure I could make a living here," and "my parents loved the land and so do we."

(2) faith in themselves, with comments such as "my parents succeeded because of their upbringing," "we were happy being mixed farmers," "we didn't really want to do anything else," "belief in hard work," "no other training but farming," and "faith in our own ability."

(3) religious faith, "closeness to nature, dependence on God."

Bennett summed up the "survivors" by suggesting that there were a number of factors working together, "their obligations to their families, and the prohibitive cost of moving large families out of the region; their ability to curb ambition; their patience and frugality" (1969:216). He believed that these survivors practiced "delayed gratification" for a generation and then took advantage of the improvements in the post-World War II period. He also maintained that they manipulated their environment, using it for their own purposes, "constantly transforming nature into natural resources" (1969:19).

6.3 Farm labour

Census information for CD #1 and CD #3 shows that in 1936, 51.2 percent of all farm labour was classified as that provided by members of the family, and almost 98 percent of that was listed as male labour. Those figures are matched fairly closely by the answers provided by survey respondents. When asked "did the family provide sufficient labour year round to operate the farm?", 55 percent responded that they did and 45 percent indicated that outside help was needed. Of the latter group approximately two-thirds classed that labour as outside paid labour and one third as unpaid assistance from neighbours. In the category of outside paid labour the majority indicated that they employed hired men, usually year round, one even indicating that they had the same hired man for 23 years, another indicating that the man was hired because he was "too old for military service" and a third hired a Dutch immigrant to work on the farm in 1951. Rates of pay in 1940 ranged from $1.00 to $2.00 per day plus board and room, to $4.00 or $5.00 per day for local assistance where no board or room was required. By 1950 those rates of pay had increased in most cases to between $5.00 and $7.00 per day plus board and room for regular hired workers and between $8.00 and $9.00 per day for local assistance, rising to $10.00 per day, or $1.00 and $1.50 per hour in 1956. The hired men usually were employed year round on seeding, cultivating, harvesting and summerfallowing while daily labour was employed primarily at harvest time in threshing crews. Often neighbours would save money by exchanging labour and working on one another's threshing crews, though by the 1950s the arrival of the combine harvesters meant that, for the most part, the threshing bees were a thing of the past.

In order to earn sufficient money for the family to survive on the farm it was often necessary for the farmers, or members of the family to spend some time each year "working out", that is working away from the farm and usually, while doing that work, living away from the farm too. In 1940 approximately one quarter of all farmers spent some time off the farm. In that same year a national registration took place of all 16-year-olds and compulsory military training began. There was a significant movement from the farms to the cities and towns where, in addition to all the other attractions there was an "expansion of industrial production to meet civilian and military requirements" (Britnell and Fowke,1962:177). By March 1941, military service for farm workers was postponed wherever it was felt that such service would jeopardize food production. An example of such a postponement comes from an interviewee who told of a "war department man out of Regina" who came to examine his farming operation in the Schuler area. After following the farmer around all day and eventually having supper with him at 9 pm, the visitor stated "there'll be no more notices coming to you to come to the recruiting office, you will stay here and raise food for the nation."

Any impact of labour shortages on the dryland farms was not really felt until 1942. A report in the Medicine Hat Daily News in 1941 stated that "farmers with large families are self-sufficient in harvest matters but farm labour demand otherwise is being taken care of by transient workers arriving in the district. Daily wage at present offered is $3.00" (August 9, 1941). For many of the smaller farmers, if labour was scarce during the national emergency they returned to the strong sense of community that had developed during the dry years. They helped one another. Increased and speedier mobility, resulting from more available transportation, provided an added benefit. As one survey respondent reported "due to the shortage of labour during the war it was necessary to help each other at the busy times of the year." However, that was really only an answer for the smaller farms.

For the majority of farmers the really serious shortages began in both labour and machinery in 1942. The 1942 annual report of the Alberta Department of Agriculture claimed that the problem was that "farm wages are not high enough to retain men on the farm in competition with wages offered elsewhere and the freezing order of March 23, 1942, has not appeared to have been wholly effective in keeping men in agriculture . . . the labour situation continues to be a major problem facing the farmers" (Government of Alberta, 1943:64-65). In that year the "Agricultural Division of the National Selective Service established the Dominion-Provincial Farm Labour Program" (Isern, 1982:186). The aim of the program was to ensure that there were sufficient workers available particularly for harvest time. As mentioned earlier, additional regulations passed in 1942 attempted to "freeze" the farm labour on the farm, allowing work off the farm only for 60 days in any year. For a longer period, a permit was needed. Many farmers then found work off the farm during the winter months but had to return to the land by certain dates. But there were some real concerns. A report stated "the problem of manpower is a serious one on the farms and will continue until some means is devised to utilize the available labor (sic) in the most efficient manner." [26] In a brief submitted in 1942 by the Alberta Farmers' Union several suggestions were made "in hope of ameliorating what has come

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[26] An untitled, undated and unsigned three page document in "Miscellaneous notes, papers and correspondence re: agricultural affairs in Alberta, c 1942-1947. PAA 68.328 94.

to be a desperate situation and not worth any thought that they will provide an effective remedy." The brief lists six remedies including free transportation for farm labour to wherever it is needed, the exemption of young men from army service until the harvest is in, the use of "petty" criminals and of "Jap" labour, the employment of elevator agents in the fields and delaying the start of high school until the harvest is in.[27] Two similar recommendations from a committee established in 1942 by the Alberta Federation of Agriculture were sent to the Minister of Agriculture. The committee comprised representatives of the provincial Department of Agriculture, the local officers of the Unemployment Insurance Commission, the Alberta Federation of Agriculture and other organizations. The recommendations paralleled two of those from the Alberta Farmers' Union. They were:

> 1. requesting the Minister of National Defence to grant furloughs to the members of the Armed Forces stationed in Canada possessing farm experience, in order that these may work in the harvest fields, and
> 2. petitioning the Minister of Education to defer the opening of high schools until October 1st, that the older boys and some of the girls of the province may assist directly or indirectly, in bringing in the crop.[28]

The 1943 annual report of the Department of Agriculture explained that "during the late Fall an effort has been made to encourage men who are not needed on farms during the winter to take employment in essential industries such as mining, logging etc. Permits given to these men expire on March 31, 1944, thus assuring that they will be returning to the farms for spring work" (Government of

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[27] A two-page undated "Brief submitted by the Alberta Farmers' Union with suggestions for alleviating labor shortage for harvesting this crop." Presumably the brief was submitted to the Alberta government. PAA 68.328 94.

[28] Letter written by E.W.Brunsden, secretary, on behalf of the directors, Alberta Federation of Agriculture to the Minister of Agriculture, August 7, 1942. PAA 68.328 94

Alberta, 1944a:11). The newly appointed district agriculturalist for the Medicine Hat area, J.W.Taylor, reported in the 1944 annual report that that year was the second consecutive dry one in the district and "in co-operation with the National Selective Service, 340 farmers were issued permits for winter employment in essential work. These were absorbed by local industries" (Government of Alberta, 1945a:90). The Medicine Hat Daily News, April 14, 1943, reinforced the return to the land reporting "all farm labour must return to that industry" and again on March 25, 1944, "agricultural workers must return to the land by March 31'" and finally April 13, 1945, the paper announced "the farm workers are streaming back to jobs on the land, returning in Alberta from bush work and from industrial plants."

TABLE 11: Yields per acre of wheat in bushels - various locations, 1941-1947

Location	1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
Schuler	20	14	25	4	3	3	6
Walsh	20	15	25	5	8	3	6
Irvine	25	18	28	6	4	3	9
Seven Persons	10	20	30	6	4	3	12
Whitla	10	14	25	3	2	1	7
Manyberries	5	12	25	5	6	3	12
Etzikom	14	13	21	5	2	4	8
Orion	8	11	25	5	4	3	15
Foremost	12	14	18	5	4	3	9
Empress	23	12	25	12	5	8	10
Jenner	20	4	18	2	3	2	4
Hilda	25	11	20	4	3	3	4
Nemiscam	13	10	17	4	3	4	7
AVERAGE YIELD	15.8	13.0	23.2	5.0	4.0	3.3	8.4

Source: Station Records, Alberta Wheat Pool

With reasonable harvests in 1941, 1942 and 1943 (Table 11) averaging 15.8, 13.0 and 23.2 bushels per acre respectively, the need for harvest assistance was significant. Throughout 1942 and 1943, the Medicine Hat Daily News reported "labour shortages for harvest" (August 25, 1942), "airmen help harvest crops" (November 25, 1942), "continued demand for agricultural help" (June 21, 1943) and "soldiers available for 1943 harvest" (July 21, 1943).

In 1943 the provincial government created a "Farm-for-Victory" program and set up community committees to oversee the program. Part of the responsibility of those committees was "to assist in the distribution of farm workers, and to deal as well with other problems pertaining to farm labour" (Government of Alberta, 1944a:64-65). However the succeeding years proved less demanding with yields averaging 5.0 bushels per acre in 1944, 4.0 bushels per acre in 1945, 3.3 bushels per acre in 1946 and 8.4 bushels per acre in 1947, with the result that the demand for assistance at harvest time diminished. Before the yields would pick up again in 1951, the need for transient human labour for harvesting had been replaced in large measure by machines.

As early as 1942 there was talk in the agricultural subcommittee of the Joint Economic Committees established by the United States and Canada of the shortages of labour and machinery and in particular of "the need for more efficient use of wheat harvesting machinery" (Isern, 1982:187). However, it would be 1946 before cross-border harvesting was permitted, with equipment going from Alberta, Saskatchewan and Manitoba south into the United States and even later, according to the annual reports of the Department of Agriculture, before U.S. equipment came north specifically into Alberta:

> Six farmers, two trucks and two combines (self-propelled, 14 foot) left Granlea and plan to harvest in Oklahoma, Kansas, Nebraska, South and North Dakota and return home. (Medicine Hat Daily News, June 12, 1946).

> Alberta combines to help U.S. harvest. The rates for straight combining in the U.S. are from $3.00 to $5.00 per acre while rates in southern Alberta run between $1.25 and $2.50 depending on yields. (*Ibid*, July 27, 1946).

The 1952 annual report stated "this year for the first time grain combines entered Canada from the U.S. for custom combining in this province . . . permits were granted for entry of 33 machines which operated south and east of Calgary" (Government of Alberta, 1953:86). Apparently 11 combines from the U.S. harvested in Alberta in 1955 and 29 in 1956, though by 1960, as crop yields deteriorated only five U.S. harvesters came to the province.

On March 31, 1946, the Dominion-Provincial Farm Labour Agreement was terminated. The assessment of the program appeared in the 1945 annual report of the Department of Agriculture where the agreement was termed "eminently satisfactory. It is doubtful if, under the circumstances, a more effective method could have been devised to serve the farmers of the Province" (Government of Alberta, 1947:77).

The mechanical changes were coming. The newspaper trumpeted the arrival of the self-propelled combine in the Hilda area in July 1947 (Medicine Hat Daily News, July 16, 1947). In the same month a report from Rose Glen [on the road from Medicine Hat to Schuler] stated that "farmers are busy getting headers and threshing outfits in readiness for the coming harvest. Many of the farmers will be heading and threshing at the same time. This operation lessens the amount of handling and reduces the cost of labor (sic)" (*Ibid*, July 23, 1947).

As machinery became more available and affordable, the transient farm labour problems of the early 1940s lessened. Even as early as 1946 the percentage of the farm work being undertaken by family members had increased to 83.0 percent. Hired labour declined by 71 percent between 1936 and 1950 in CD #1 and by almost 50 percent during the same period in CD #3. Neither the need for "off-farm" work nor the need for hired labour entirely disappeared during the period 1940 to 1960 but with wheat yields ranging from 14 to 28 bushels an acre through the early 1950s, the amount of "off-farm," non-agricultural work certainly lessened considerably and "the vast improvement in harvesting machines and harvest methods . . . resulted in a marked decrease in seasonal requirements for farm labour" (Shaw and Gilstorf, 1954:9). That did not mean that as the farm grew in size there was not need for permanent paid farm labour. By 1956, 41.0 percent of the farmers in the new CD #1 indicated they employed full-time paid labour over and above the unpaid family labour which continued to contribute significantly to the success of the farm.

The 1960 annual report of the Department of Agriculture summed up the state of farm labour by that date:

> Prominent among the changes in Alberta's Agricultural Economy has been the significant change in the farm labour picture. Transient and general farm labourers have decreased in numbers to the degree that they are of little economic importance. Workers formerly depending on this type of employment preferred the apparent benefits of urban jobs with their shorter hours and unemployment payments. Farm labour was supplied, on the farm, by farm families using their own resources, taking advantage of labour saving equipment, and more powerful machines. Neighbours and experienced farm workers in local urban centres are now depended on to help with peak labour requirements (Government of Alberta, 1961a:125).

6.3.1 The role of the women and children

In a traditionally male dominated rural society the work of women and children, in particular, would not likely be considered under the census category as part of the farm work force. Much of the survival through the 1930s had a more practical aspect primarily seen in the importance of the family and the role that the women and children played in ensuring survival. Although not a question in the survey, the role of the women became well defined both in interviews and when reading the local histories. Not always clearly spelled out, individual references to the role of the mother or the wife revealed that in some cases, at least, that role was significantly more than that of the traditional housewife. In many cases farm work was quite foreign to the women who came and homesteaded:

> when she was out on the prairie picking up buffalo chips for firewood with her bare hands, cracked and bleeding, with three little children hanging on to her skirts, she used to wonder what had possessed her to leave her nice comfortable home (Wiedeman,1973:38).

> I'm sure many times mother must have wished she was back in Scotland, but with hard times and no money and five children to keep her busy she contented herself by talking about scenes back home (Butterwick,1975:375).

There is no doubt that the hardship of dryland farming took its toll on women who were expected not only to be mothers and housewives but also to do their share of the farm 'chores.' This ability to be a partner in the farming operation was a recognized role for the women, pitching in when needed. One of the interviewees in talking about the role of the woman stated

> we got married in 1942 and, of course, she was a school teacher at the time but she helped with everything. She could do just about everything I

> could do. She would run the tractors, and swathers and everything else and pick stones even.

This partnership role is repeated in many of the local histories,

> mother, with the stamina of a pioneer woman, helped stack at headering time, raised an abundance of garden vegetables, burned thistles and milked many cows . . . she also made butter which they would take to town in trade for groceries (Wiedeman,1973:91);
>
> mother helped along with field work, as we did, picking and harvesting. There was work for all even carrying plow shares to the blacksmith's shop (Hilda,1974:174);
>
> one time during harvest I drove four horses on a binder. I had never driven four horses before but I must have mastered the art because that night at supper time, Mr. Broten said "I didn't know I married a teamster" (Iddesleigh,1961:35);
>
> The sometimes short growing season and the possibility of early frosts made the fall a rough time indeed and often this busy mother found herself hitching up a team for harvesting while husband, John, hauled the wheat to Orion in a grain-wagon with another team (Manyberries,1983:111).

In particularly bad years, economically, it was often necessary for the man to "work out," that is to leave the farm for a period of time and find a job elsewhere. In almost all cases the wife and family would stay on the farm and maintain it. This resulted in some cases in the woman carrying out the tasks around the farm usually performed by the husband:

> he went back to Regina in the fall to work again. Mrs. Bauer stayed on the homestead during the winter (Wiedeman,1973:15);
>
> my dad went out west harvesting in the fall to earn some money, while mother stayed home and milked some cows which supplied the groceries and clothing (*Ibid.*:10);

> the women were left at home to look after the children and the farm. Some of them had many hardships while their husbands were away (*Ibid.*:181);
>
> Dad had to go to North Dakota to work, as there wasn't any crop that year and therefore no money for necessary things. Mother was carrying on with the work left behind, and decided to do summer fallowing, using three horses and a disc (Hilda,1974:45);
>
> then father returned to Calgary to work. When he had earned $80.00 he sent mother the money. She bought a cow, for milk, from Fred Zoner of Hatton, Saskatchewan . . . during the summer months mother used clay and straw to plaster the inside, the outside and the roof of the house. That fall, after harvest, she hauled some wheat to the elevator at Irvine (*Ibid.*:56);
>
> my father soon went to Calgary to earn money to take care of his family. My mother and I [Charlotte] were the farmers, with the help of the two Heine brothers (*Ibid.*:128).

In the most extreme cases, on the deaths of their husbands, some women attempted to carry on with the homestead with help not only from their children but also from neighbours:

> John died . . . Maria struggled on the farm, the youngest child two, and the oldest fifteen, seven in all. Joseph left school to work to bring in revenue. John, quite small, with the oldest girl, Annie, and Mrs. Andreseck, worked the farm (Wiedeman,1973:v);
>
> In June . . . Karl passed away after a short illness. The crops were poor, but I stayed on the farm with the four younger children until 1937 (*Ibid.*:59);
>
> My father helped me put in my crop which turned into a bumper harvest. With hired help and neighbours assisting, I managed to farm for two years as a widow (Hilda,1974:110).

The role played by women in the homesteading and the development of these farms is often neglected simply by default. Perhaps that role is best summed up by one of the interviewees who stated:

> sometimes we say behind every successful farmer there's a good wife . . . for farmers at that time, if the wife didn't help them, they weren't successful. That is all there is to it.

There is no doubt that in attempting to assess how and why the dryland farmers survived into the 1940s a very significant amount of credit has to go to their women without whose labour and drive many of the family farms certainly would not have survived.

An equally important role in the survival process was the availability of no-cost labour in the form of children. The many chores so essential for the simple maintenance of the farm and the land could not possibly have been carried out by one man. Although some hiring of extra help might be a possibility, for most dryland farmers the work of the children made it possible to continue operating the unit since "the income off the farm was aften (sic) very meagre in the dry years" (Wiedeman,1973:4). The 1943 annual report of the Department of Agriculture recognized the value of children's labour with regard to the survival of the farm. It reports "that surveys reveal that 7,366 boys and girls assisted with the harvest for a period of at least two weeks between September 1 and October 10 . . . this is a source of labour which made a very substantial contribution to the harvesting of the 1943 crop" (Government of Alberta, 1944a:11).

The implication in some of the local family histories is that a large family was essential, "they also reared a family of four boys (one set of twins) and two girls to help lighten their work" (Wiedeman,1973:91). In most cases the chores were routine and each child was designated some, "we tried to cope as best we could with the housework and what chores we could do and gradually we were able to help with the field work as well" (*Ibid.*:183). However, if there was a single child, or if the children were all girls, the expectation of help could become onerous:

> I [Inga] was the only child so I had to help with all the work. We all worked together helping one another . . . I remember one spring, just as seeding had started, dad got blood poisoning in the middle of his hand. I was expected to put the crop in. We had horses to work with so dad had to explain everything to me. I got the crops in all right, but what an experience for me being a girl (*Ibid.*:121).
>
> I, Bertha, being the oldest, had to help with the farm work, plowing and harrowing, also chopping oats for feed (Hilda,1974:236);
>
> My sister, Amanda, and I used to help dad with the farming operations, by driving four horses on the harrows or a plow (*Ibid.*:274).

There can be no question that the assumption of basic chores such as feeding animals, picking rocks and generally helping around the farm, and later, as the children grew, helping with seeding, ploughing and harvesting, all provided a no-cost mechanism for running the farm unit and made the difference in difficult years between survival and abandonment. So the involvement of all the family in the day-to-day operation of the single family farm contributed significantly to its survival.

6.4 Additional work

Another survival technique adopted by those wanting to stay on the land involved earning cash by taking additional jobs. It appears "practically every homesteader had a practised skill in addition to farming" (Bennett and Kohl,1975:21). Of those surveyed 57 percent indicated that they took jobs off the farm to earn additional cash. The majority of the tasks were local farm related tasks such as custom tilling, seeding, harvesting, threshing, or combining, for neighbours who did not have their own machinery. Some were local service jobs such as "hauling" mail, custom trucking of grain and coal, driving a school bus, drilling water wells, fencing land, ploughing fireguards or working as the local blacksmith or carpenter. Some spent profitable time hunting and trapping coyotes, badgers and weasels and selling the pelts.

Other jobs involved time spent away from the farm, known as 'working out,' as mentioned above (page 145). Approximately 20.0 percent of those surveyed indicated that some member of the family went harvesting to other parts of Alberta and Saskatchewan, hiring out their labour. The crops between 1944 and 1948 in most localities in southeast Alberta were so poor that farmers left after their own harvest was completed and went to other farms to help out as hired labour. For example, in the Schuler-Hilda districts yields of spring wheat between 1944 and 1947 were in the three to six bushels an acre range (see Table 10), so it was not surprising to read reports such as:

> quite a number of young farmers around here went north and west for harvest work as most of the work is over in the district, with crops very poor (Medicine Hat Daily News, September 16, 1944);
>
> Andrew Krassman and sons Bill and Vic went to Carbon, Alberta, for harvest work and Ben Weisgerber left Tuesday for harvest work (*Ibid.*, September 21, 1944); and
>
> most of the young men are away assisting in the harvest out west and north (*Ibid.*, October 5, 1944).

The annual reports of the Department of Agriculture provided additional evidence of this "off-farm" work. In 1943, for example, the report stated "over 200 farmers from the south-eastern part of the Province, where crops were poor, were recruited and given transportation to other areas" to assist with the harvest (Government of Alberta, 1944a:65). And again in 1945, "300 harvest hands from the south east part of the Province were given transportation to districts farther north when they had harvested their own crop . . . but on account of a relatively short crop in most districts the demand was not urgent" (*Ibid.*,1946a:73). The need for "off-farm" work continued into the early 1950s and in 1950 the census reported 14 percent still claiming to be taking such employment, though by 1956 that figure had dropped to only 7.1 percent.

Others took jobs related to previously learned trades as in the case of Anton Gatner who, in 1920, sold his shoe and harness repair business in Napoleon, North Dakota, for "brighter prospects" in Canada. As World War II began:

> Dad went off to help lay cement for the local airport outside Medicine Hat. Later he worked at the Bullivant Shoe and Repair Shop in his old trade, spending months at a time away from us. This work enabled him to save the down payment on a John Deere Model "D" tractor and a Cockshutt one-way disc tiller by 1942 . . . custom tilling . . . came available on those neighbours' farms whose boys went off to war and allowed us to meet the payments on the new tractor and one-way tiller (Wiedeman,1973:47).

Yet others simply 'worked out' wherever there were jobs. Bill Clarkson, for example,

> worked out in the winters. He worked in the woods in BC. One winter he worked in the Drumheller area. He also worked in the mines at Lethbridge (Manyberries,1983:99),

and the family stayed on the land. In other cases the whole family moved away for a period of time. Such was the case of the Holdershaw family originally of Orion and later of Manyberries. In winter, George Holdershaw would seek outside work and take his family with him.

> One winter we spent in Lethbridge where Dad worked in a tailor shop [he had been a professional tailor in Ontario]. Another winter we spent in Medicine Hat where Dad worked for the city as a labourer and another winter he worked at the Lane Ranch a few miles north of Orion. Mother helped with the household duties there (*Ibid.*:239).

The families did whatever had to be done in order to ensure their survival. Times were hard and many worked off the farm much of the time in the 1930s and 1940s especially, just to support their families (Pendant D'Oreille,1970).

The pay range for working "off-farm" in the 1940s according to the survey responses was around $4.00 per day, rising to around $5.00-$7.00 by the early 1950s, and even as high as $10.00 in the later 1950s. Those respondents who either worked "off-farm" themselves or remembered other family members working "off-farm" indicated that by far the commonest type of work occurred during harvest time. Several indicated absences of four to six weeks "to help an uncle in Rockyford" with harvest, or to spend "a month or so in the Brooks area where irrigated crops were good" during harvest time. One respondent claimed to spend about three weeks each year custom combining in the 1950s using his own machine and charging anywhere from $1.50 to $3.00 per acre for the work. Yet another joined a threshing operation for four to six weeks for a number of years in the 1940s, earning around $3.00 per day.

Another option, under the Dominion-Provincial Farm Labour Agreement, was that funds were provided to assist harvesting units "to move from areas of short crops to districts where extra aid was required." Financial assistance was made available if the approved moves were 50 miles or more and payment was made on the basis of actual transportation costs, that is, by freight or truck, or in the case of outfits moved by road, an allowance of $0.30 per mile was provided (Government of Alberta, 1944a:66).

The need for cash to keep the family on the farm was still an important aspect of "off-farm" labour in the 1940s, particularly when wheat yields were so poor. However, in the 1950s much of the "off-farm" work and even the non-farm tasks were more significant for those who, for whatever reason, chose to stay on the land even though their farm might have comprised a section or less in size. By

1951, 28.3 percent of the farms in CD #1 were 640 acres or less in size and in CD #3 that percentage was 54.2 percent. It was those smaller farmers in particular who continued to hold additional jobs in order to stay on the farm, these are what Flower called "the small resident farmer" who

> often exists because of his own determination to stay on the land. He owns insufficient acreage to provide an adequate income [simply from farming], and though he may rent more land from an absentee landowner [or from relatives] he still needs to supplement his income. Part-time jobs, such as custom spraying or combining, driving a school bus, electrical work, etc., provide this supplement. He may have one or several such jobs. In all cases the farm provides the bulk of the income (1972:719).

When asked in question 38 to indicate "in 1940 approximately what was the total income needed to keep your farm commercially workable," most declined to give a dollar figure, some tried, but the figures, of course, varied with the size of the farm, anywhere from $1,000 to $10,000. What was interesting was that most who did choose to respond indicated that in the 1940s approximately 10 percent of the income needed to maintain the farm came from "off-farm" sources while in the 1950s though the cost of maintaining the farm had risen by 50 to 70 percent, the percentage of "off-farm" income had decreased to four or five percent. Most also put government payments as a source of income for both periods at around 10 percent, only the occasional respondent indicating that no revenue came from the government. Obviously by the early 1950s the more reliable wheat yields (Table 12) meant that the need for "off-farm" work to augment farm income had declined significantly.

6.5 Diversification

Cameron described these dryland wheat farmers as "satisficers",[29] they managed from year to year learning

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[29] This term was coined by H. A. Simon to explain the concept of satisficing rather than optimizing the decision making process and is described in his book Models of Man: Social and Rational, Wiley, New York 1957.

to grow wheat, maybe a little barley, or a little oats, or a little rye, a little flax, depending on what the market conditions are but primarily they grow wheat. I have seen farmers who should have been growing other things growing wheat because they liked growing wheat (1994).

TABLE 12: Yields per acre of wheat in bushels - various locations, 1951-1957

Location	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57
Schuler	14	22	28	25	18	27	16
Walsh	7	18	24	16	16	27	24
Irvine	7	23	30	15	18	22	25
Seven Persons	4	18	20	20	18	22	35
Whitla	6	20	24	20	13	27	28
Manyberries	8	13	25	16	16	25	23
Etzikom	12	20	25	20	17	28	28
Orion	8	18	26	18	18	30	28
Foremost	13	25	25	25	15	30	30
Empress	6	20	27	30	27	30	30
Jenner	3	16	25	20	10	25	20
Hilda	5	12	25	22	14	26	24
Nemiscam	11	22	26	22	16	28	28
AVERAGE YIELD	8.0	19.0	25.4	20.7	16.6	26.7	26.0

Source: Station Records, Alberta Wheat Pool

Wheat was the dominant crop grown by dryland farmers in this area. Table 13 shows that in CD #1 although the total acreage in wheat had declined, in 1951 77.3 percent of cropland was still seeded in wheat. The proportion was traditionally less in CD #3, in the mid to low 60 percent range over the 10 year period. Perhaps the most interesting feature in Table 13 is that no other single crop threatened the position of wheat. The explanation for the dominance of wheat and other small grains was simple according to Wreford Watson. He wrote:

> small grains like wheat, rye, oats, and barley, were replacing wheat-grass and rye-grass and other seed-bearing grasses. In other words grain farming was a natural adjustment to the environment. It maximized all its advantages, while suffering the fewest disadvantages. Like the grasses, the small grains could spring up and come to seed in a short growing season, unaffected by the extreme severity and length of winter. Like the grasses they could make do with rather scanty rainfall and, perhaps more important still, adjust to the variability of rainfall. With the breeding of drought-resistant and frost-resistant grains, the two principal hazards were cut down (1963:264).

The dominance of wheat as the crop of choice is shown clearly in the census statistics. Of all the crops grown in CD #1 in 1931, for example, wheat accounted for 81.5 percent of the total cultivated acreage, rising to a high of 85.9 percent in 1936 and remaining over 80.0 percent through the 1951 census. In CD #3 in 1931 wheat occupied 75.5 percent of all cultivated cropland, declining to 62.6 percent in 1941 when there was a higher percentage of land devoted to flax (1.1 percent in 1931 and 6.9 percent in 1941), barley (3.7 percent in 1931 and 7.5 percent in 1941) and oats (10.2 percent in 1931 and 9.4 percent in 1941).

But the conditions in the 1930s were difficult for crop cultivation. Drought, rust and grasshopper infestations all seemed to conspire to cause crop failure. Statistics showing average yields per acre of wheat for various locations throughout the study area illustrate the problem (Table 14). Even when yields were slightly improved, low grain prices meant that in order to survive it became necessary to diversify. Eighty percent of those surveyed indicated that they either tried different crops and/or raised cattle, but mixed farming also involved in many cases pigs, sheep, poultry, and milk cows.

TABLE 13: Main Crops grown in CD #1 and CD #3, 1941–1951

	1941				1946				1951			
	CD#1	%	CD#3	%	CD#1	%	CD#3	%	CD#1	%	CD#3	%
Total Cropland	827,610 ac	52.5	453,176 ac	61.2	938,811 ac	58.4	453,872 ac	66.6	1,002,437 ac	57.1	504,012 ac	27.7
Total Summerfallow	678,557 ac	43.0	207,301 ac	28.0	635,978 ac	39.5	195,337 ac	28.7	675,960 ac	38.5	218,385 ac	27.7
Wheat	670,965 ac	81.1	283,383 ac	62.5	770,328 ac	82.1	293,359 ac	64.6	774,545 ac	77.3	307,989 ac	61.1
Oats	41,717 ac	5.0	42,704 ac	9.4	33,581 ac	3.6	36,298 ac	8.0	25,557 ac	2.5	39,278 ac	7.8
Barley	23,772 ac	2.9	33,845 ac	7.5	34,659 ac	3.7	23,475 ac	5.2	34,335 ac	8.4	41,241 ac	8.2
Rye	38,480 ac	4.6	15,617 ac	3.4	39,136 ac	4.2	21,842 ac	4.8	37,807 ac	3.8	22,776 ac	4.5
Flax	16,270 ac	1.9	31,236 ac	6.9	5,999 ac	0.6	13,661 ac	3.0	9,051 ac	0.9	22,960 ac	4.5
Alfalfa	5,616 ac	0.7	21,036 ac	4.6	4,341 ac	0.5	35,146 ac	7.7	4,563 ac	0.5	34,097 ac	6.8
Other crops	30,790 ac	3.8	25,353 ac	5.7	50,767 ac	5.3	30,091 ac	6.7	116,579 ac	6.6	35,671 ac	7.1

Source: Canada Census 1941 and 1951, Census of the Prairie Provinces 1946

TABLE 14: Yields per acre of wheat in bushels–various locations, 1934–1940

Location	1934–35	1935–36	1936–37	1937–38	1938–39	1939–40
Schuler	2	10	1	0	10	11
Irvine	8	8	2	0.5	12	19
Whitla	12	12	2	1	8	6
Manyberries	10	8	2	3	12	8
Etzikom	20	15	5	3	13	12
Empress	4	6	2	0	7	14
Jenner	3	4	0	0	8	7

Source: Elevator Reports, Alberta Wheat Pool

Eighty-eight percent of those who claimed that they diversified simply grew a variety of what Watson calls the "small grains," in other words they merely increased their acreages of barley, oats and rye, and included the occasional crop of fall rye, durum wheat (what one interviewee referred to as 'macaroni wheat'), 'pearling' barley and fall wheat, though they did experiment with other crops including some flax, mustard, sunflower seed and safflower, usually on contract. One example, mustard, was usually grown on contract to a company in Great Falls, Montana. As one interviewee put it "we grew a little rye, not a hell of a lot of rye [and] some flax. One year I had a field of canary seed. We tried just about everything." One of the respondents reported "only when we could not sell much of our wheat did we seed a good deal of flax with reasonable success," another "grew sunflowers because wheat was not moving and I could sell sunflowers," and a third stated "we grew other crops in the 50s only because we could not sell all our wheat." Nonetheless wheat remained the crop of choice. In answer to question 47, 54.4 percent claimed they practiced "monoculture," that is they only grew wheat. The comments from these farmers included "it was most suitable to the area, the easiest to handle and produce, and most farmers had better experience with wheat," "less work and a surer crop," "it was the best crop to grow in our area," and "wheat was an important crop and it took less care and was less risky." For the other 45.6 percent experimentation with cash crops for survival made a great deal of sense. Despite the 54.4 percent who claimed they practiced monoculture, many of them also answered questions 45 and 46 by indicating that they tried other crops. After all 88.2 percent had already indicated that they had diversified and 67.7 percent claimed to have tried growing flax. However, all those interviewed who had tried to grow flax claimed that it left a mess in the fields. It was difficult to get rid of the 'leftovers' and to replough the land. Some even claimed that flax took too much moisture out of the land. But, despite such problems, some farmers found flax growing, if only occasionally, a very profitable venture. One respondent stated "I grew flax in 1958 but the price went down to $2.50. I had a good crop and it paid for a new home on the farm." That response, however, was unique, all the remaining flax growers were not impressed with the crop or its residue.

It was equally interesting to find out whether after particularly good moisture conditions in the fall or early spring, farmers were prepared to take full advantage of the situation and plant every available acre. The majority of the respondents, 77.1 percent, claimed they were never tempted to seed every available acre, claiming that "experience has shown better average yields on a 50/50 summerfallow crop rotation." Others exhibited the caution and conservatism that Bennett claimed typified the dryland farmers, with comments such as "stubble seeding was not a good practice because the next year you may not have a wet fall/winter and therefore not be able to grow any crop" or "because if it turned bad I had no summerfallow for next year, besides it created more work in spring and fall." Some were tempted but they claimed they resisted temptation and one response, in particular, explained why, "the thought occurred but we didn't do it, first because we were afraid there would not be sufficient rain to carry the crop through to maturity and second that there would be no summerfallow for next year, meaning perhaps two lost years in a row."

Then there were the 22.9 percent who indicated that they were prepared to take the risk by seeding "wheat on the summerfallow and rye on the stubble for cattle feed."

However, attempts to find the right crop for the area went beyond the traditional grain crops. The Medicine Hat Daily News reported on November 16, 1948, that "Alderman Scott plans to test the belief that Medicine Hat can grow cotton." The January 13, 1949, edition reported that the plan was to plant four acres of Texas cotton seed. The newspaper's editorials of March 17 and March 29, continuing the booster-like support for irrigation and for crops that would benefit from irrigation, supported the experiment despite comments from a dominion agricultural expert that there was "not a hope" of growing the crop. Nothing more was reported about the experiment until September 19 when the newspaper mentioned that the "test" continued. Then on September 30, the Medicine Hat News[30] reported the first "Hat cotton ball" pops, 134 days after planting. The promise for the following year was to try Californian cotton seed. The only comment in 1950 occurred on August 21 when the newspaper reported that "cotton is proving a dud in Medicine Hat this year" (Medicine Hat News, August 21,1950).

In other words, many of the farms attempted to become self-sufficient and throughout the local histories comments such as "when crops failed we relied on the cattle to pay the bills" (Bindloss,1985:144) and "it was the farmer who cared enough to keep a small herd of cattle that survived" (Wiedeman,1973:66) are frequent. Figures 30 and 31 show the relationship between the numbers of beef cattle and other major stock between 1931 and 1951 in both census districts.

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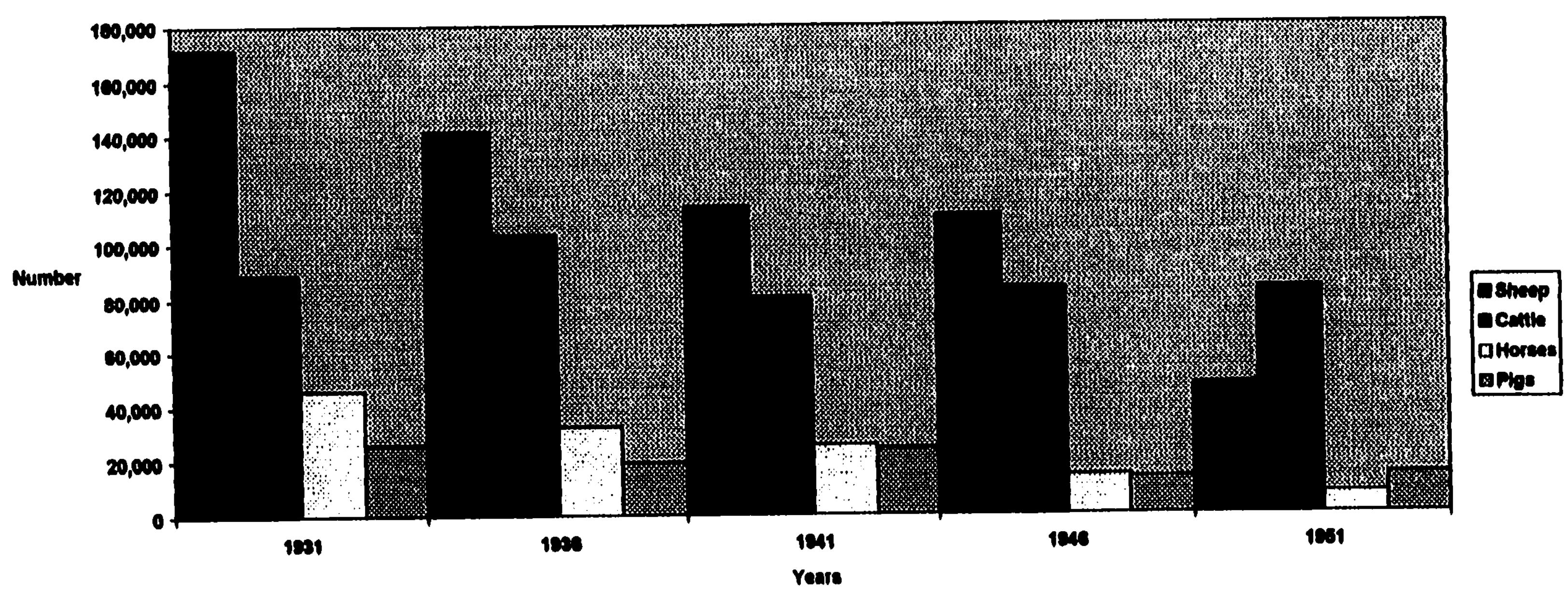
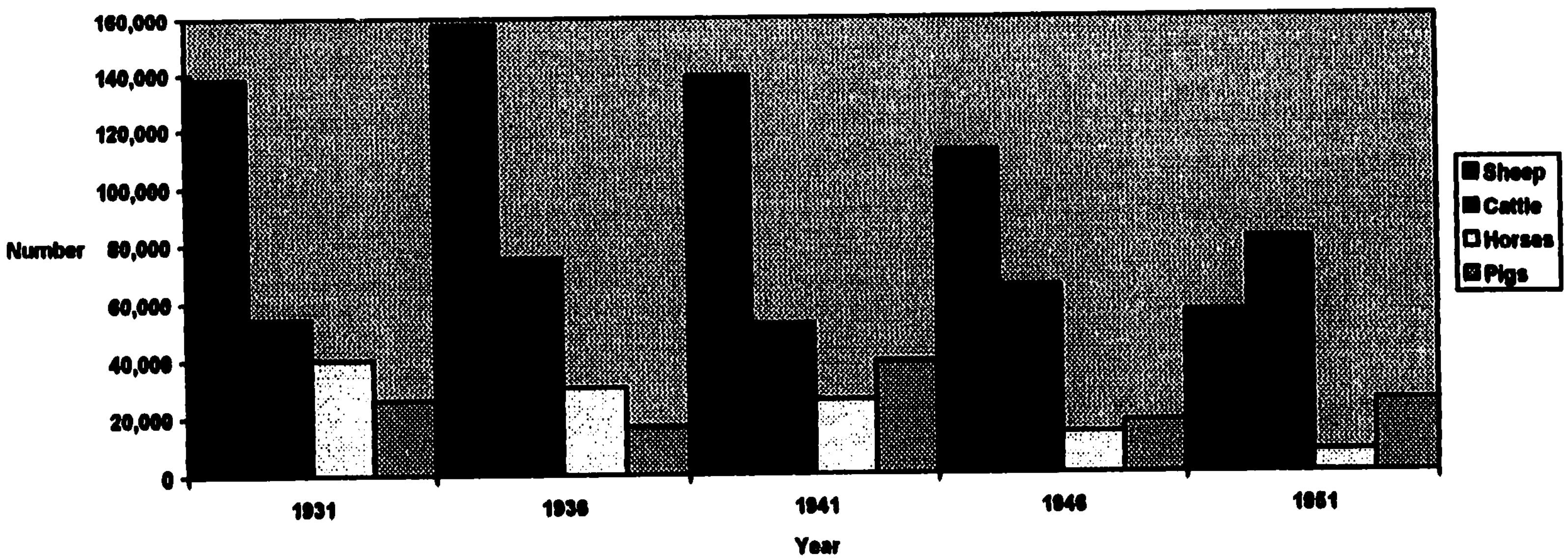
30 The Medicine Hat Daily News became the Medicine Hat News on March 11, 1949.

Figure 30 Total Number of Sheep, Cattle, Horses and Pigs in Census Division # 1 1931 and 1951



Source: Canada Census 1931, 1942, and 1951: Census of the Prairie Provinces 1936 and 1946

Figure 31 Total Number of Sheep, Cattle, Horses and Pigs in Census Division #3 1931-1951



Source: Canada Census 1931, 1942, and 1951: Census of the Prairie Provinces 1936 and 1946

A significant feature was the rise in the numbers of beef cattle by 1936, an increase of 13.5 percent in CD #1 and 43.8 percent in CD #3. By 1941 there had been an equally significant drop in the numbers. According to Gray:

> much of this increase in livestock numbers was on the ranches for the simple reason that the prices offered at the stockyards often barely covered the freighting of the animals to market. The ranchers were able to keep their steers at home and let them graze for another year. . . [b]ut when farmers reached the point where they had no more feed, they had no such choice. Their cattle had to go to market" (1967:145).

During the 1930s when crop yields were poor (Table 14) the poor conditions for growing crops made the diversification to other grain crops unproductive also. Many farms became small mixed farms with a milk cow or two, some pigs and some chickens. Providing for their own immediate food supplies allowed them to survive with only a minimum need for cash. Traditional dryland wheat farmers were forced to diversify if only temporarily to survive. Question 32 in the survey asked whether, "in order to survive," diversification either with the addition of animals or different crops took place. What the responses indicated was a drift to more "mixed" farming, emphasizing self-sufficiency:

> our family milked a few more cows and raised a few more hogs;
> cattle, including a few milk cows for cream sales, chickens for eggs, pigs for meat;
>
> raised crested wheat and tall wheat grass and Russian wild rye for seed, also more cattle;
>
> it was very necessary to have a small mixed farm operation to survive, for example, milk cows, chickens, pigs, etc.;
>
> milk cows and I grew sunflower seeds when wheat was not selling and also flax and mustard;
>
> only when we could not sell much of our wheat . . . then I seeded a good deal of flax with remarkable success.

A fuller description of this self-sufficiency comes from <u>Schuler Stalwarts</u> where one of the contributors, Mrs. Joe Shank, describes

> the "Thirties" . . . [as] a time to test one's ability to cope with each situation as it arose. One had to depend on his self-reliance. We, like our neighbours, had a big garden, from which we canned, dried or salted down all vegetables that would not store well. Flowers for beauty, intermixed with vegetables, attracted insects which aid pollonization. We kept enough cattle, pigs and poultry for our own use, curing and canning meats for summer use. We rendered down our own lard and made our own soup. During the dry years, when some vegetables wouldn't grow, in spite of watering, peddlers came from Medicine Hat and traded garden products for chickens. We crushed wheat for porridge, so that a few staples foods such as flour, sugar, tea and coffee were about all we needed (Wiedeman, 1973, 146).

For many, the adversity imposed by having to modify their farming style somewhat, provided some lessons which proved life-long, many claiming to have been "taught thrift" and the benefit of being "self-sufficient."

This diversification from a more traditional monoculture did not "topple . . . king wheat" in southeast Alberta because with changing technology, improved prices and more appropriate weather conditions wheat was to reassert its dominance, though never quite to the same extent (MacPherson and Thompson,1984:11). Diversification proved to be a relatively short-term measure aimed at surviving a difficult economic period.

6.6 Government assistance

> We had quite a struggle in those dry years, but with help from the government and municipality, we somehow made it.
> (Wiedeman,1973:118)

Concern about drought conditions in southeast Alberta was expressed by the Alberta provincial government as early as 1925. The first steps it took were to attempt to implement a scheme that would help wheat farmers relocate and thereby encourage an extension of ranching operations or ranching/farming combinations in the dry areas. Both levels of government, provincial and Dominion, participated in a joint commission to study the area and its problems, in particular related to "charges against the lands and the indebtedness of various municipalities" (Stapleford,1939:77). The commission reported in 1926 but the withdrawal of Dominion government support left the whole scheme in the hands of the provincial government which chose not to act until 1929. In that year it created the Tilley East Area Board which covered the area east of Brooks and north of Medicine Hat. In 1932 the Tilley East Area Act was amended to include land north of the Red Deer River and an administrator was appointed to administer the area. The provincial government provided seed and fodder relief from 1931 and even fuel oil relief in 1935 (Stapleford,1939). A description of available relief occurs in the Bindloss local history:

> There was no crop insurance, unemployment insurance, baby bonus or welfare, but there was "relief." The provincial government [actually the Dominion Government] paid farmers $5.00 a month for keeping a hired man, and paid the hired man $5.00 also. Most of the farmers gave their $5.00 to the hired man. There was also "relief" seed and feed, and carloads of "relief" food--vegetables, apples and fish. The food came from the Maritimes, BC and Ontario where they were not experiencing drought. Families might also receive a cheque for $12.50 a month.
> (Bindloss,1985:3)[31]

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[31] The Federal Government assumed full responsibility for the drought area in Alberta, known as the "federal area," and which included the southeast of the province.

A second short comment from the Hilda local history is worth retelling. The writer remembers "the government used CPR box cars to ship apples, beans, and cheese, and cod fish to people in the welfare areas. All those items were appreciated, except in some cases where people didn't know how to prepare the cod fish. Some people used them as snow shoes, for patching holes on the roofs etc. (Hilda,1974:74). Similar stories about relief occur throughout the various local histories of the area and all refer to the "dried fish." By 1937 direct relief from the provincial government to the Improvement Districts in CD #3 totalled $47,853.67 and a further $59,736.45 in 1938. The figures are more than ten times higher than the direct relief paid to the farmers in CD #1 and are attributable to two causes: the poorer soils in many areas of CD #3 and the larger number of smaller farm units, 61.8 percent being less than 640 acres in size (Government of Alberta, 1938 and 1939a).

In 1935 the Dominion government, in response to the need to provide "the back-stop necessary if the farmers were to survive drought and crop failure until the rains came again", passed the Prairie Farm Rehabilitation Act, thereby creating the PFRA (Morton,1985:29). All the emphasis of this act was to provide very practical help to individual farmers to control soil drifting on their land, construct dug-outs to catch spring run-off waters, build stock watering dams, regrass their land, and even move, if necessary, to more suitable land (Gray,1967:99).

The agricultural departments both provincially and nationally combined to publicize the effectiveness of the new conservation methods with the immediate emphasis on the prevention of the blowing away of the top soil (Palmer,1990; Gayton,1996). The response to the plans was dramatic as farmers bombarded the organization with requests for assistance. Between 1935 and 1946, the PFRA completed 28,431 small water projects across the three prairie provinces,

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However, "the actual administration of direct relief . . . [was] the responsibility of the provincial government" (Stapleford,1939:72).

22,971 dugouts, 4,439 stock watering dams and 1,021 small irrigation projects. In 1945/46 alone, 4,605 small water development projects were completed, 485 in Alberta (PFRA, 1946:22). The success of the proposals to store water either in dug-outs or by building small dams is evident from the fact that 91.0 percent of those surveyed indicated that they had received PFRA assistance to construct dug-outs or build dams. The vast majority of the farmers surveyed viewed the involvement of PFRA in a very positive light though, naturally, there were some detractors, one suggesting that "as with all government agencies they were too far behind" and the other claiming there was "too much of a hassle for all the benefit that was available." It appears that only a few took advantage of the offer to move away, "there had been no crops, so the government assisted farmers who wanted to move. We applied and were permitted two train box cars where we loaded our belongings, and headed north to Uncle John's [near Ponoka] in the fall of 1937" (Hilda,1974:247). The work of the PFRA continued in the 1940s and 1950s with regrassing large areas of abandoned crop land with crested wheat grass,[32] establishing community pastures, helping to create shelter belts and providing copious amounts of information about farming practices for this semi arid land. District experimental stations were established by PFRA across the prairies, three in particular in the study area, in Bindloss, Foremost and Whitla. These substations were

> essentially outposts of the Dominion Experimental Farms, so distributed as to make accessible to all farmers in the PFRA area such services as demonstration and experimental plots as well as aid in showing local problems arising from the ever-present hazards of drought and soil drifting. Each substation is a privately owned farm, usually of 640 acres in extent" (PFRA, 1946:30).

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[32] Recent studies at the Lethbridge Research Station are questioning the value of "crested wheat grass." Though it served its purpose in the 1930s by helping to prevent soil erosion, "it is not nearly as effective as native grasses at building organic matter in the soil." As a result its value is being questioned. (Don Gayton, "Turf Wars," <u>Canadian Geographic</u>, May/June 1996:70–78)

Gray sums up the work of the PFRA by stating:

> [and]in terms of money spent and projects completed the accomplishments of the PFRA are impressive. In the terms of the transformation of the Palliser Triangle from an arid, wind swept and beaten down countryside into a prosperous country in which the farmers have come to enjoy the amenities of civilized living, the accomplishments are also massive. But what makes them so is not the sight of the land as it has become after everything was done. It is the memory of what it was like before the first halting steps were taken to beat back the encroaching desert in 1935 (1967:185).

But there was a second piece of Dominion government legislation passed which was also to assist dryland farmers to survive. In 1939 the Prairie Farm Assistance Act (PFAA) was passed. This new law provided a modified form of compulsory crop insurance for the Western grain growers. MacEwan explains that farmers could "contribute one percent of their returns from wheat, oats, barley and rye delivered at the elevators. Thereafter farmers in townships declared to be part of a crop failure area qualified for assistance payments from the fund" (1980:157). The reaction of those surveyed to PFAA's drought bonus scheme ranged from "no good for nothing" to "it was a great help." Seventy-seven percent of the respondents claimed to have taken advantage of the program at some point and while some thought the payments "so small as to be of no benefit," others felt they "did help as living costs were much less and a dollar could still buy something," to others who saw the program as most beneficial, "it was only part of being able to survive. It was this cash to plug holes like land taxes, machinery repair bills, doctor and grocery bills, to help keep the local economy stable." There were all kinds of concerns expressed about the administration of the PFAA most notably revolving around the fact that in making the initial assessment for payment purposes, it applied to the whole township rather than to the individual units within the township. The result was that some farmers felt that they had been cheated:

> [t]o add to the misfortune, that happened to be the year which the Prairie Farm Assistance Plan used as the base year for future payments of farm assistance. Without any crop that year, we were never eligible for any payments under the plan, which deprived Dad of much needed funds to operate the farm. (Wiedeman,1973:47)

Both these pieces of legislation, to paraphrase Morton, placed the stability and skills of government behind the farmers gambling with the unpredictable chances of an area of marginal rainfall and assisted in their survival (1985:29). But the relief wasn't altogether free. Throughout the local histories there are references to farmers paying the government back for relief they had received.

> After harvest we would come home and work with four horses on the scraper building up the roads for the municipality to pay back for our relief feed for the stock. (*Ibid.*:80)
>
> The cost of relief was to be repaid. When defaulted it was charged against the land titles. Many farmers repaid their bills. (*Ibid.*:67)
>
> This "relief" had to be paid back, and was charged against the land titles. (Bindloss,1985:3)

The Improvement District reports for the southeast show that in 1938 $2,394.55 was listed as "road credit work" and by 1940 the amount being charged under that category had risen to $41,706.60 (Government of Alberta, 1939a and 1941).

In 1941, however, the Social Credit provincial government passed legislation that would in essence wipe the slate clean and forgive all tax debts accumulated during the "dirty" or "hungry" thirties, thus providing one more aid to survival. This move was to make quite a difference to the budgets of the 18 Improvement Districts in the region which by 1941 had accumulated tax arrears totalling $410,960.94 (*Ibid.*,1942b). As one of those surveyed stated, government assistance "was helpful to get us over the hump." Not everyone felt that the governments, Dominion, Provincial and municipal had paid "adequate attention" to the needs of the dryland farmer. When questioned on this issue, only 55.6

percent of the respondents thought that the Dominion government had done enough to assist them, only 50.0 percent felt that the Provincial government had and only 33.3 percent credited the municipal level of government with providing sufficient assistance. There was an erroneous feeling among the dryland farmers that they had been left to survive as best they could. They had been helped but much of that help was not obvious to them.

6.7 Wheat prices

In discussing the improvements in farming conditions between the 1930s and the 1950s one of the questions asked of the interviewees was "could you name one particular thing that you believe caused the change?" One of the most frequent answers was the stabilization of the price of wheat, or as one individual commented, "I'd have to give a lot of credit to the Wheat Board." As another farmer commented in the survey, "it did away with speculators in the market. It paid you maybe sixty cents in the fall when you had to sell some of your wheat to live, and maybe one dollar next summer. So you knew how much you could sell and what price you were going to get."

The Canadian Wheat Board was re-established in 1935.[33] Fowke maintains that the reason for its re-establishment was clear, "whatever preference the growers had for a wheat board over a voluntary co-operative . . . the one insistent

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[33] "Re-established" because a Canadian Wheat Board was created by the Dominion Government in 1919. The Board "was given a monopoly in the sale of the Canadian crop both in domestic and foreign markets" (Fowke,1957:172). The "controlled period" of the operation of the Canadian Wheat Board ended by the early fall of 1920. Prior to the 1919 Board there was also established on June 11, 1917, a Board of Grain Supervisors "by Order-in-Council and under the Wartime Act, the purpose being 'to prevent to the utmost possible extent any undue inflation or depreciation of values by speculating, by the hoarding of grain supplies, or by any other means.' The Board took over all the wheat supplies in Canada and had a monopoly of wheat sales both in the domestic and export markets. Producers were paid a uniform price based on the various grades and kinds of wheat" (Nesbitt,1960:22).

element in the western viewpoint after 1920 was the belief that the open market or speculative system was detrimental to the producers and therefore could not be tolerated" (1957:263). In 1931 "the bottom fell out of the world price of wheat. The Canadian wheat price for the year fell by 53 percent and for the rest of the decade oversupply and competition among wheat exporting nations kept the price depressed (Kerr and Holdsworth, 1990:99). In addition the restriction of the world export grain market, as a result of newly erected tariff barriers and increased foreign production, reduced the value of prairie wheat by almost a third between 1929 and 1932 (*Ibid.*:Plate 43).

The Canadian Wheat Board Act of 1935, originally aimed at giving the board a monopoly not only for the marketing of wheat, but also for coarse grains (oats, barley and rye) and flax seed, was amended prior to becoming law (Dunbabin,1955:103). Significant political opposition to the bill resulted in amendments which required the board

> to establish annually a minimum price at which it would purchase wheat offered for sale by the grower, and to issue participation certificates which would entitle him to share in any additional proceeds. The individual grower might sell all, or none, of any intermediate portion of his wheat crop to the board. The board's fixed prices provided a floor below which no grower needed to dispose of his crop (Fowke,1957:265).

There was a great deal of lobbying for higher wheat prices throughout the west and considerable opposition to the Dominion government's belief that it should remain out of the grain trade. Some of the opposition is reflected in the Medicine Hat newspaper reports. The United Grain Growers urged wheat pricing policies which would match more closely increased costs of living (Medicine Hat Daily News, September 20, 1941). Farmers held a mass meeting in Lethbridge demanding $1.00 per bushel wheat (*Ibid.*, October 2, 1941). The same newspaper supported the demands for increased wheat prices with editorials on October 24, 1941; January 30, 1942; and September 11, 1942.

The Canadian Chamber of Commerce urged the Dominion government to provide more adequate income for farmers (*Ibid.*, November 13, 1941). The premier of Alberta, William Aberhard, supported demands for increased wheat prices claiming in a report in the Medicine Hat Daily News, May 7, 1942, that "agriculture was being treated as the Cinderella of Canada," being exploited and bullied "by the two ugly sisters of money-lending institutions and the market manipulators who live by their wits at the farmers' expense." In addition, the United Farmers of Alberta at the March 31, 1941, meeting passed a resolution going on record as "favouring a scheme whereby the farmer (bona fide) be permitted to sell 1500 bushels of wheat each year and receive $1.25 per bushel for same, basis No. 1 Northern at local points; all wheat above this amount be sold by government wheat board" (Priestley and Swindlehurst,1967:182). On September 20, 1943, the Dominion government finally assigned to the Canadian Wheat Board the monopoly on the sale of wheat and in 1949 that monopoly was extended to include barley and oats.

According to Nesbitt "the Wheat Board demonstrated its value to the grain producers of the prairie provinces during the war years" by reducing the unmarketable supplies of wheat from 495 million bushels in July 1943 to just 74 million bushels in 1946 (1960:320). The impact of the stabilization of prices for the dryland farmers was particularly significant.

Table 15 shows the prices paid for No. 1 Northern wheat at Fort William[34] between 1931 and 1947 and shows over a 400 percent increase in price. The immediate impact of such price increases can be calculated by using figures provided to the Medicine Hat Chamber of Commerce by C.M.Moore, a district engineer for the PFRA. In a speech reported in the Medicine Hat Daily News,

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[34] This price per bushel is not the price received by the farmer. From it is deducted Wheat Board administration costs, country elevator handling charges, freight, terminal and storage charges (Nesbitt,1960).

TABLE 15: Canadian wheat prices per bushel to producers for No. 1 Northern wheat at Fort William

1931	$0.36	1940	$0.70
1932	$0.32	1941	$0.763
1933	$0.47	1942	$0.855
1934	$0.47	1943	$1.026
1935	$0.60	1944	$1.373
1936	$0.875	1945	$1.439
1937	$0.875	1946	$1.834
1938	$0.875	1947	$1.834
1939	$0.80		

Source: Stewart and Porter,1942; Britnell and Fowke,1962.

February 29, 1942, Moore compared the costs of dry farming wheat and spring flooded wheat in 1941. Assuming a crop yield of 10 bushels per acre, he showed that the expenditure for seed and seeding, combining and hauling the wheat to the elevators as $4.30 per acre. The revenue calculation was straight forward. At a selling price of $0.50 per bushel, revenue came to $5.00, showing the farmer making a profit of $0.70 per acre. If the selling price of the wheat increased to $0.70 per bushel at the elevator, as it did by 1942, the profit per acre becomes $2.70, a significant increase. The re-establishment of the Canadian Wheat Board and the stabilization of wheat prices had a significant impact on the chances of survival of dryland farmers, particularly during the 1940s when, in some years yields were not much greater than they had been in the 1930s.

The crop situation did not improve much in the 1940s. The three years 1940/41 to 1942/43 saw reasonable crops across the whole study area but the next three years produced yields well below average, five bushels an acre or less, making huge areas eligible for PFAA support. When asked about the primary causes of crop failure in the 1940s in question 22, every single respondent pointed to lack of moisture as the number one concern, followed by heat (77.8 percent), wind (69.4 percent), sawfly (38.9 percent), hail (22.5 percent) and rust (5.6 percent). When asked for other causes, two of the respondents answered grasshoppers. The lack of moisture and excessive heat are seen as major contributors to crop failure in the section in chapter 5 where daily temperatures and precipitation along with newspaper reports are tabulated for May through August 1942. A single response sums up the frustration associated with heat and wind, "I have lost many a good crop in late July and early August in a three day blistering Chinook."

The real question that should be asked is whether the individual farmers were prepared to try and help themselves in these circumstances, or whether they were only interested in waiting for help from any one or all three levels of government. Only six of the respondents indicated that they believed there were no measures that they could take on their farms that might provide some protection against drought, and one of the respondents simply stated "no, just prayed." The remainder, however, felt that there was some action that they could take and indeed some of them believed that the only solution that would work would be one they found themselves. They did not see themselves dependent on government for assistance.

By far the commonest answer to ameliorate drought conditions was given as summerfallowing. Answers such as "be careful to conserve as much moisture as possible by good summerfallow," "summerfallow half the land for a year," and "proper methods of summerfallowing," all supported the belief that this single improved farming practice would make a significant difference. But it was not the only answer. Others suggested, for example, "leave the stubble standing and try not to leave the soil black to prevent drifting," "we manufactured sub-soil cultivators to leave the trash on top, this also protected the land from drying winds and caught extra snow," and "recognize the hazards of a potential drought and conserve moisture, capture snow, and cultivate to retain mulch." There was a recognition by the 1940s of a need for some strategy to protect as much of the land as possible against drought. But there seemed to be a reluctance, or perhaps a caution, amongst most of those who responded to pursue innovations and there seemed to be a surprising lack of interest in trying to understand, in a semi-scientific manner, the two basic variables on which their livelihood relied, namely precipitation and the soil. Only 14.0 percent of those surveyed indicated any interest in precipitation records and only 19 percent indicated any knowledge of soil testing on their farm. Of the latter group only four had actually requested soil tests on their land, the remainder had been involved in a more general survey of the whole area. One respondent even indicated that a soil survey of his land would be a waste of time and money while he was dryland farming. Of those who requested soil tests two were interested in seeing if their land was suitable for irrigation; one was interested in what fertilizers if any might improved his crop (he found that the assessment was that fertilizers were not generally needed in the area); and the fourth wanted to know what type of soil he had and what kind of grain would grow best.

Such findings tend to reinforce Bennett's belief that dryland farmers "were extremely cautious about agronomic innovations and other risky ventures" (1969:213). This conservatism leads to a wide variety of responses related to government involvement. The question asked whether "adequate attention in terms of funding, research or practical assistance was provided" by each of the three levels of government. The responses were wide ranging, with 55.6 percent believing that the Dominion government had done a good job, 50.0 percent thinking that the Provincial government had, and 33.3 percent feeling that the various municipal governments had helped. The responses ranged from receiving no help and, by extension, indicating that self-reliance was the only answer, with comments such as "farmers did not know any better in those days and had no help from any level of government," "I do not believe in depending on government," "we had no government assistance at all then. You either survived on your own or went down," "it was up to the individual farmers to look for answers," and "government in general did very little to aid farmers," to the other end of the spectrum. Six of the respondents referred specifically to the P.F.R.A. as being very beneficial, though there was one individual who was very critical of P.F.A.A. claiming that it was inadequate in terms of farmer contribution and financial payment. Others felt that they received a great deal of help from both the Dominion and Provincial governments through experimental farms, departments of agriculture and the work of district agriculturalists. But others, while praising governments for their help, were critical of the lack of research suggesting that "the response came slowly. It might also be fair to say the research was not always accurate" and "there is never enough research but research is very slow and costly. The P.F.R.A. provided much assistance but government cannot spend too heavily on one industry at the expense of others and the taxpayers."

For some, then, it appeared that there was little they either could or were prepared to do to help themselves, relying almost exclusively on whatever nature provided. The majority, on the other hand, seemed prepared to try whatever was necessary to ensure survival, even if it meant having to accept help from government.

Additional federal legislation that had an impact on the dryland wheat farmer was the Wheat Acreage Reduction Plan, introduced in March 1941. The purpose of this program was to reduce dramatically the acreage of wheat planted and thereby help to reduce the accumulating surplus. The proposal was that for every acre converted from wheatland to summerfallow, the farmer would receive $4.00 per acre as compensation, or $2.00 an acre if the conversion was to coarse grain or hay. Census statistics for the two divisions suggest that the program had a definite effect, more so in CD #3 which showed a 13.0 percent reduction between 1936 and 1941, than in CD #1 which had a four percent reduction in the same period(see Table 16).

TABLE 16: Wheat acreage CD #1 and CD #3 1936-1946

Year	Census Division #1			Census Division #3		
	All field crops	Wheat	Percentage	All field crops	Wheat	Percentage
1936	824,902	708,349	85.87	416,704	315,040	75.60
1941	826,283	670,965	81.20	452,650	283,383	62.60
1946	933,947	770,328	82.48	452,735	293,359	64.80

Source: Census of Canada 1941;
Census of the Prairie Provinces, 1936 and 1946.

According to the reaction to the program from the Medicine Hat Daily News commentator, Bob Tufts, "wheat acreage here will not be greatly reduced in 1941 . . . because the adoption of the summerfallow policy in this area would quickly turn the district into a dust bowl" (April 10, 1941). However, Tufts' comments appear to have been quite wrong. On August 12, 1941, the paper reported that "3,400 final claims under the Wheat Acreage Reduction Program have been made in the Tilley East and Cypress areas of southeastern Alberta, comprising 240 townships essentially in CD #3. Of those who answered question 35(a) in the survey about participating in the program, 48.5 percent indicated that they had participated and that they had reduced their wheat acreage between 20.0 and 50.0 percent. Most had simply summerfallowed, though two indicated they had sown coarse grains. Most of those interviewed claimed to have viewed the government's initiative with some scepticism, four responses typifying the general feeling:

> No because we had no guarantee of how much we were getting. How can you say on the farm that you cut your acreage down because there is

> too much wheat? Next year I might not get a crop at all and how do I live or how do I manage?
>
> There was one year that they paid us not to plant wheat, a wheat reduction program. I don't think we used it because it would throw our whole rotation off. But it was used by many of the farmers and probably helped some. I don't know.
>
> You're darn right. There was a wheat acreage reduction in 1941. You know there was too much wheat. They couldn't store it so they paid you to keep your land in summer fallow. And I'll give you an instance of a guy that made thousands. In 1941 he just summer fallowed a lot of his land. So in 1942 he puts in a crop and gets a bumper. He had the most wheat of anyone in western Canada besides getting the payment the year before for not putting in the wheat.
>
> In 1941 the PFRA paid the farmers for summer-fallowing, Carl [Olson] did just that. In 1942 he seeded sixteen hundred acres and raised enough wheat that year to fill his quota for five years. (Iddesleigh,1961:38).

MacEwan sums up the dilemma faced by the federal government:

> following the good crop of 1939, the effusive farmers planted heavily in 1940, too heavily for an export market that would take only 230 million bushels a year, and the 514 million bushels of wheat harvested resulted in glut and more depression in prices. The Canadian carry-over of 480 million bushels at the end of the 1940-41 crop year brought the Wheat Acreage Reduction Program . . . but in spite of the subsidized reduction, the western wheat crop of 1942, totaling 529 million bushels, was the biggest in the west's history (1980:158).

Whatever the outcome of the acreage reduction program, the dryland farmers, if they participated at all, saw it only as a temporary measure, though statistics for both CDs (see Table 17) indicate that the very high percentage of wheat acreage to total crop acreage reached in 1936 was not to be approached in the next two decades.

When asked in question 39, what was the impact of increased wheat prices, by far the commonest two responses were that it allowed the farmers to stay on the farm and, in addition, provided many of them with income which permitted them to consider expanding the farm. In response to question 11, for example, 71.4 percent of those surveyed indicated that they had acquired more land in the decade 1940-1950. Only a single respondent indicated that the increases in wheat prices had a impact on the decision to sell the land, since the lessee of the land, benefiting from improved wheat prices, was able to purchase the land outright. For a minority of those responding the suggestion that increased wheat prices had little impact was a consideration, though, for two, cattle were becoming a major factor on their farms and for the others frugality was important, the need to be prepared for another possible reversal, either with poor crops or low prices. But the persistence theme kept surfacing in the respondents' answers. Comments such as "it never entered my mind to stop farming but it did make life easier to get a better price" and "never had any thought or intention to sell or move out" support the earlier reported responses to question 28 when the second highest ranking was given to the "will to succeed" as a reason for staying on the land. The persistence was rewarded as grain prices rose and as weather conditions improved, according to 38.2 percent of those responding to question 42, and as farming practices improved and more and better machinery was available, responded to by 44.1 percent. As one farmer put it "our mental attitude became rosy again. We had hope, it was not just a gamble." But for several it was very specifically the farming practice of summerfallowing that was to change wheat farming for the better. Four of the respondents when asked what single factor turned things around replied "summerfallowing."

An interesting experiment on the benefits of summerfallow is reported in the Medicine Hat News. The story describes some work done by Asael E. Palmer of the Lethbridge Experimental Station. In four sites in the brown soil zone, two plots of wheat were grown. One was planted in soil which had been in summer fallow for a year, the other in soil which had grown wheat the previous year. The results showed that the wheat yield on land which was in summerfallow the previous year was at least twice that on the land which had grown wheat the previous year. Two of the sites used by Palmer were in the study area and were, in all probability, two of the three experimental substations referred to earlier. At the Bindloss substation the yields were 15.7 bushels an acre on summerfallowed land compared to 6.7 bushels on non-summerfallowed land and at the Whitla substation, 8.5 bushels compared to 4.1 bushels. At least 50 percent of the farmers surveyed indicated that they consciously changed their farming style in the 1940s to adopt the use of trash cover summerfallow in order to improve their farming practices. Palmer's experiment clearly, for them, reinforced what they believed to be right (August 6, 1949).

TABLE 17: Percentage of crop land under specific crops–CD #1 and CD #3

Crop	1931	1936	1941	1946	1951	1956
Wheat	79.17	82.42	74.62	76.71	72.16	65.60
Barley	2.19	2.11	4.51	4.19	8.37	8.33
Oats	7.94	4.56	6.60	5.04	4.32	4.80
Rye	5.57	3.86	4.23	4.40	4.04	1.42
Flax		0.51	3.75	1.42	2.13	8.61
Mustard					0.65	6.69

Sources: Census of Canada 1931, 1941, 1951, and 1956
Census of the Prairie Provinces 1936 and 1946.

Britnell and Fowke (1962) pointed to another factor which, because of its temporary nature might well be viewed as a survival strategy, rather than an adaptive one, though even more legitimately it might be simply classed as a bonus (MacEwan,1980). The British demand for Canadian bacon increased significantly as a result of World War II because its traditional markets were closed. MacEwan states that in 1944, for example, nine million pigs were marketed in Canada and "two-thirds of them came from western farms" (1980:159). This dividend to western farmers was also a benefit to some of the dryland farmers in southeast Alberta. Census statistics alone show how the farmers were able to take advantage of the temporary demand. In 1936 there were 35,989 pigs in CDs #1 and #3. That number had increased to 63,761 in 1941 and returned to 31,388 in 1946. When asked whether they had kept pigs for commercial purposes during the war, 47.2 percent of the respondents indicated that they had and all indicated that they had no pigs by 1950. For some this 'bonus' proved a boon, "we had dry years in the 40s too but had both pigs and cattle to keep us going" (Butterwick, 1975:255).

6.8 Financial assistance

Bennett refers to the dryland farmers as "fiscal conservatives" (1966:213) and that conservatism is most evident in their use of part of their net cash income to reduce the debt on their farms and land (Britnell and Fowke,1962). As Sam Elford's son Edgar claimed "life was a constant battle with the elements, bank loans and mortgage payments. Where there was money it was used, and borrowing took place again as 'next year' would always be better" (Butterwick,1975:271).

There were at least four types of debt that farmers could accumulate during the 1930s. The first involved mortgages, though if additional land was being purchased from a neighbour or a trust company there were other ways of conducting that purchase rather than simply taking out a mortgage. Three examples from the local histories show Johnnie Stelter "bought the "Stone Place" . . . for 1400 bushels of wheat from the Great West Trust Company" in 1942 (Bindloss,1985:321); Jacob Kirschenman "bought the one section of land at one dollar down and the balance in bushel payments, until total bushels paid in full, with a ten year interest free period" (Hilda,1974:159) and "I sold Stan Albertson a quarter section of land for ten dollars an acre. When I offered him the land Stan said that he had no money. 'Well,' I said, 'you've got a dollar, that's all that's needed to make it legal.' So he gave me a dollar and we signed the papers" (Butterwick,1975:281).

The second resulted from liens placed against property and equipment as a result of non-payment of bills. An example of the occurrence of liens is shown in a letter from lessee J.J.Novy of Foremost to landowner T.H.Walker:

> I will need a loan from you of $100 until this fall. Will pay you interest on your money. Also give you a lien on my share of the crop, if you so wish. I will need the money to buy fuel with. The government is going to furnish some fuel but not enough (*Ibid.*:388).

The third resulted from unpaid municipal and provincial taxes, which by March 31, 1941, had risen to over $411,000 in CD#1 and a further $100,000 in CD#3 (Government of Alberta,1942b).

The fourth resulted from the requirement by the provincial government for those who had received relief during the very dry periods, in whatever form, to pay for that relief when they were able, "the cost of relief was to be repaid. When defaulted it was charged against the land titles" (Wiedeman,1973:67). In passing a 1938 amendment to the Agricultural Relief Advances Act 1936, the provincial government authorized the borrowing of money by municipalities from the General Revenue Fund to furnish "the necessitous farmers all or any of the following commodities, namely seed grain, fodder, feed grain, fuel oil, and lubricating oil." The amendment also required the publishing in The Alberta Gazette names of individuals who receive such advances. The June 30th 1939 issue of The Alberta Gazette listed those farmers who received advances for the 1939 year, listing for example 33.0 percent of the farmers in the Municipal District of Bow Island, receiving relief totalling $77,644.59, and 42.5 percent of the farmers in the Municipal District of Forty Mile with relief totalling $128,710.85 (Government of Alberta, 1941).

Many dryland farmers accumulated debt throughout the 1930s as they struggled to survive but as the economy began to pick up, particularly between 1944 and 1946, that debt was paid back quickly. It was noteworthy that an editorial in the Medicine Hat News in 1947 commented that "farm mortgage debts have declined 73 percent since the end of 1937" (May 2, 1947). The following table, Table 18, looks at farm revenue between 1940/41 and 1950/51 and shows very clearly the source of any increased prosperity by 1950/51.

TABLE 18: Farm revenue 1940/41 and 1950/51

	CD #1		CD #3	
	1940/41	1950/51	1940/41	1950/51
Wheat acreage[1]	670,965 acres	774,545 acres	283,383 acres	307,989 acres
Average yield per acre[2]	11 bushels	9 bushels	12 bushels	9 bushels
Price per bushel[3]	$0.66	$1.70	$0.66	$1.70
Income from wheat[1]	$4,917,130	$12,382,100	$2,662,290	$4,831,274

Sources: [1] Census of Canada 1941 and 1951
[2] Elevator Reports, Alberta Wheat Pool
[3] Britnell and Fowke 1962.

In both CDs the total acreage in wheat increased over the decade, by 15.4 percent in CD #1 and by 8.7 percent in CD #3. Interestingly wheat yields happen to have declined sharply which helps to point to the real boon to the farmers in that decade and that proved to be the price of wheat which increased 157.6 percent. The result was that income from wheat, from not a very large increase in acreage, and a very modest yield, did, with much improved crop payments, increase farm income dramatically. If these increases are then measured against other cost increases for the decade then the full impact of the wheat price increase can be seen. During the same decade, according to the Annual and Monthly Wholesale Prices, Farm Prices and Living Cost Indexes, the consumer price index rose 37.2 points, equipment and material costs rose 88.1 points, farm living costs rose 69.1 points and farm prices for agricultural products rose 164 points (Economic Annalist, 1953). With substantially more income it is clear that mortgages would be paid off and that money was available for the purchase of new equipment, as that equipment became available.

Census figures show that between 1941 and 1946 the first two types of debt declined quite substantially. Farm mortgages in CD #1 were reduced by 47.5 percent, and in CD #3 by 31.2 percent and even more remarkably liens were reduced in that same time period, by 88.7 percent in CD #1 and by 87.0 percent in CD #3 (Table 19). It is equally important to note in Table 19 that only 29 percent of the farms in CD#1 and 39 percent of the farms in CD#3 had mortgages in 1936 and that percentage increased only slightly by 1941. S.J. Crawley, writing in The Monetary Times in 1943 suggests that "the burden of farm mortgage debt is not nearly as great as often pictured.. The 1941 Census shows that probably half the farmers in Alberta have no mortgage debt" (1943:90). The figures for CD#1 and CD#3 show that 69 percent and 60 percent of farms, respectively, have no mortgage debt. A commentary in The Monetary Times suggested that "from cold statistics it can be demonstrated fairly conclusively that the Western farmer is getting back on his feet again after the trying years of the thirties" (1943a:28).

The dramatic nature of that change is illustrated in a story about Sig Fjeldberg who settled just one mile south of Bindloss. In 1945 Fjeldberg built a "4500 bushel granary and said, 'Dot, when that is full, we'll be rich.' In 1951 he built a

15,000 bushel granary and said the same thing. The granary was not always full and he was never rich, but from a $3,000 mortgage when he took over the farm in 1936 to a full granary in 1951 was a remarkable achievement" (Bindloss,1985:140). The payment of deferred taxes to the municipality and to the province and the repayment of relief costs were dealt with more expeditiously. One of the mechanisms that was used in both cases was

TABLE 19: Mortgages and liens in CD#1 and CD#3, 1936–1946

	1936	1941	1946
CD#1			
Mortgage Debts			
Total amount	$3,738,100	$3,952,700	$379,400
Farms reporting	1,136 (29%)	1,298 (31%)	681 (19%)
Debts covered by liens			
Total amount	$389,200	$423,450	$148,000
Farms reporting	532 (13%)	632 (15%)	71 (2%)
CD#3			
Mortgage Debts			
Total amount	$2,450,200	$1,815,800	$323,400
Farms reporting	1,009 (39%)	1146 (40%)	789 (31%)
Debts covered by liens			
Total amount	$289,400	$363,990	$68,800
Farms reporting	391 (15%)	663 (23%)	86 (4%)

Sources: Census of Canada 1941; Census of the Prairie Provinces, 1936 and 1946

for farmers to provide time to the municipality in lieu of cash. Some of the farmers paid off these debts by providing labour and by improving roads in the municipality with a scraper (grader):

people worked off their taxes on road building (Hilda,1974:0);

. . . and was the road foreman when the farmers were doing road work for the municipality to help pay off their taxes (Manyberries,1983:7).

In 1941 the Alberta government passed legislation that permitted "the cancellation of municipal debts to the provincial government for notes guaranteed for advances of seed grain and relief" (Bindloss,1985; Matte,1953:1). This move freed farmers from those encumbrances at least.

A more substantial economic move was made by the federal government with the introduction in 1945 of the Farm Improvement Loans Act. Prior to the passage of this act, Hudson suggests, "much of the new investment in agriculture and of the reduction in farm indebtedness [had] been from current savings" (1954:55). A major problem, of course, had also been the shortage of materials as a result of the war effort. Re-investment, particularly in terms of cumulative replacement needs, began to increase significantly from 1944 onwards, as the producers began to turn their attention gradually toward the home market needs. The Farm Improvement Loans Act was called "the most progressive step which [had] been taken in the last 20 years to adapt commercial credit to the needs of agriculture" (*Ibid.*:56). Under the new act "the federal government guarantee[d] a specified amount of the losses by the chartered banks and designated lenders resulting from loans made to farmers" (Binhammer,1982:209). Prior to this federal guarantee, banks had been reluctant to loan money to farmers since they considered that the interest rates they were allowed to charge would not compensate them for their "perceived higher risks" (*Ibid.*:126). The act, therefore, permitted farmers to borrow money more easily from chartered banks and other designated lenders, thereby permitting them to improve their productive capabilities.[35]

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[35] "Eligible projects for which loans may be made include the purchase of agricultural implements, equipment and livestock; the construction, repair or alteration of farm

In response to question 36 in the survey which asked respondents whether they had even taken advantage of a farm improvement loan, 30.6 percent of them indicated that they had and for a variety of purposes including machinery and equipment, cattle and land.

Persistence, "the stoicness under adversity when they were subject to the whims and vagaries of both weather and market," allowed the dryland farmers to "stick it out" (Howe,1971:iii). The decision of the governments at both the provincial and federal level finally to come to the aid of the western farmers, to attempt through PFRA, PFAA, and the Wheat Board, to assist those who wanted assistance to continue to work the land and receive a reasonable return on their work, rather than just simply abandon it, contributed significantly to the survival of the dryland wheat farmer. But to continue to farm the land, to become self-sustaining, the drylanders would have to take advantage of the many changes in technology that occurred during and immediately after the war, and in some cases, as a result of the war. They would have to change their farming practices. In short, they would have to adapt. For those who stayed, farming was not a stepping stone to prosperity; it was an end in itself. Owning the land was to provide economic security; it was to establish roots for succeeding generations; and those who stayed were prepared to tolerate hardship with the unfailing belief that the land would produce.

The most significant long-term variable in the survival of the dryland wheat farmer was the re-establishment of the Canadian Wheat Board. The creation of a stabilized commodity price for wheat provided a guaranteed return on the crop. Most of the other variables provided temporary assistance in the survival process. Items such as additional 'off farm' work and government assistance,

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buildings, including the family dwelling; general works such as clearing and breaking land, irrigation systems, electric systems, fencing and drainage . . . The maximum amount of each loan, the purpose for which the loans were made and the maximum term and rate of interest are set out in legislation" (Binhammer,1982:209).

with the exception of PFRA, were short term and made up a relatively small percentage of the farmers' total annual income. Such short-term variables allowed farmers to obtain help to survive in particularly difficult years. The availability of farm labour, both from within the region and outside, assisted in the survival process but the significant difference is shown clearly in Table 18, where the amount of farm income increased dramatically as a result of the increased price for wheat on the world market and the resulting price for the farmer via the Canadian Wheat Board.

Chapter 7

Adaptation

7.1 Introduction

Partly as a result of the will to survive and partly as a result of dissatisfaction with the way of life and a resolve to change it, the opportunities offered (a) as a result of government intervention toward the end of the depression, and (b) as a result of the war and its technological innovations, resulted in significant adaptations over a brief period of time changing dryland farming dramatically. As one interviewee put it "after World War II prices picked up, jobs were available, and people began getting higher returns for their work. From then on, financially, we were better fixed."

What emerged during this immediate post war period was what Bennett and Kohl refer to as the 'third generation.' In the longitudinal study of southwestern Saskatchewan, the Saskatchewan Cultural Ecology Research Program, Bennett distinguished three generations of settlers: "the first . . . had to establish an enterprise in a wilderness; the second had to maintain it under conditions of climatic and economic disaster; the third had to develop it to a 'modern' level of efficiency and productivity" (Bennett and Kohl,1975:23). It is the transition from the 'survival' generation (generation two) to the 'development' generation (generation three) that is the focus of this chapter.

The term that is used to describe this transition is 'adaptation.' Bennett defined adaptation as how humans respond to severe constraints and having survived, what changes they then make to begin to thrive; "the changes in the posture and activities of human beings vis-à-vis the physical and cultural environment that enable them to cope with daily life and to improve their life changes" (1990:43). Kloberdanz defined it also as "a process whereby a population alters itself or its relationship to its habitat in order to make that milieu a more fit place to live" (1980:54). Bennett quickly pointed out that in the case of the dryland farmers those adaptations were made more complicated by the complex involvement in the outside world. In summarizing this transition from 'survival' to 'development,' Morton claimed that "the West is a striking example of the adaptation of ideas, institutions and social aspirations to the limits and potentialities of a distinctive environment" (1985:33). He saw the depression and the drought which had almost destroyed the West as completing the revolt of the West against "the imported and the conventional." Yet looking closely at the various adaptations of the 1940s and the 1950s, though many, especially related to soil conservation, were locally developed, some were late arrivals from the United States. Fite talks about American farmers who had managed to survive the droughts of the 1890s as realizing:

> the implications of semiaridity for successful farming. It was necessary to plant crops that would mature early and with a minimum amount of moisture; also farming practices had to be implemented that would get the maximum value from the limited rainfall. Furthermore, larger acreages were also required to provide a decent family income, and a combination of crop and livestock enterprises seemed to offer the best prospects for success (1977:248).

Fite described other examples in the 1920s in Montana,[36] and Webb in 1931 emphasized that if farmers were to succeed, they had to grow drought resistant crops, implement dry farming techniques, and obtain larger acreages than they had in the forested areas. So the changes that began in the early 1930s in the United States with government involvement in agricultural and conservation methods were copied almost a decade later in Canada. By undertaking these measures government helped substantially to stabilize farm income. Risk was being reduced but it was never going to be eliminated, as one farmer from Seven Persons remarked "in 1947 he had been frosted out, hailed out, drowned out and droughted out" all in a single year (Medicine Hat Daily News, September 16, 1947). The constant reporting by the local newspaper of drought, hail, grasshoppers, sawfly and excessive heat, especially during the 1940s, but also in the 1950s, indicates that additional adaptations had to be made to farming practices to eliminate as many of the risks as possible, and simply to survive those like hail, drought and excessive heat, about which little could be done.

The purpose of this chapter is to look at the adaptations that were made between 1940 and 1960 in southeastern Alberta and consider the degree to which they permitted dryland farming to prosper.

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36 "In 1924, the Rockefeller Foundation financed a non-profit corporation known as Fairway Farms Inc., supervised by M. L. Wilson [of Montana State College]. This operation permitted the establishment of eight different farms in different parts of Montana where maximum efficiency could be sought under varying conditions of size, mechanization, capital investment, land-use practices and management advice" (Fite,1977:251).

7.2 Farm Size

One of the most significant adaptive changes was in the size of the farm. Indeed Bennett suggested that farmers "responded to increasing economic difficulties by accumulating land from those who left the region in search of better opportunities. During the second generation of operation of the farms, this was really the sole adaptive strategy" (1969:213). However, Bennett was quick to point out that enlargement of the farm unit, even though it permitted increased production, did not solve all the economic problems and by itself, did not explain the persistence of many operations. In his study of the use and abuse of arid lands, Heathcote pointed out "a fundamental problem of the initial tenure was that the unit size of land-ownership proved inadequate to support the family for which it was intended" (1983:262). The land had been subdivided into townships, sections and quarter sections and the original homesteading had been by quarter section, 160 acres, and perhaps with a pre-emption, increased to 320 acres. Those selling the land initially failed to understand that these acreages while adequate for a farm in eastern Canada or western Europe, were totally inadequate in the dry prairies, that "unless [they] were supplemented by use of free range, [such lands] only vouchsafed a precarious existence at best and at worst meant starvation and eventual abandonment" (Webb,1931:398). Bennett claimed that in this extremely variable habitat, this type of land tenure rarely provided all the natural resources needed to operate a reasonably successful agricultural enterprise and the result was significant attrition (1963:2). He went on to suggest that the original quarter section homestead (160 acres) needed to be expanded to a two and a half section (1600 acres) farm with all the necessary machinery and equipment. Such an expansion took a minimum of two generations, or about 55 years (*Ibid.*:6). This figure of two and a half sections proposed by Bennett, as providing a modest living only with "hard manual labour," had already become the average in southeast Alberta. By 1956, the census listed the average area of farms for CD #1 as 1909 acres, almost three sections, an increase of 71 percent over 1941, when the average size was 1116 acres, and of 98.5 percent over the 962 average size for 1931.

7.2.1 Overall picture

Table 20 shows the total number of farms in CD #1 and CD #3 from 1926 to 1951. There are at least two interesting features. The first is that the overall number in each case declines by 34.0 percent in CD #1 and by 37.8 percent in CD #3. The second is the slight variation from the downward trend around 1941 when in both cases the number of farms increased slightly.

TABLE 20: Total number of farms, 1926–1951

Year	CD #1	CD #3
1926	4411	3921
1931	3709	2754
1936	3899	2575
1941	4107	2837
1946	3574	2502
1951	2913	2441

Source: Census of Canada, 1931, 1941, and 1951;
Census of the Prairie Provinces, 1926, 1936 and 1946

This phenomenon is largely the result of the apparent return of better crops with wheat yields in 1940 around 14 bushels an acre and up to 20 bushels in some areas in 1941. As was mentioned in a previous chapter the belief that the war in Europe might bring back wheat prices in the $2.50 range encouraged some to move to the land and try to 'cash-in.' The largest reduction in the number of farm units occurred between 1926 and 1931, with a much slower decline thereafter. During that same period the percentage of the population on the farms also declined from 46.5 percent of the total population in CD #1 in 1931 to 33.9 percent in 1951, and from 67.3 percent of the total population in CD #3 in 1931 to 53.6 percent in 1951.

The increasing size of some of the farms is reflected in the Census data. Up to and including 1941, the largest category of farm size lists farms "over 640 acres;" in 1946, three additional categories were added, "640–959 acres," "960–1279 acres," and "1,280 acres and over." By 1951 three more categories had been added, the last one being "2,880 acres and over."

The simplest way to look at this growth is at the percentage in each census year of farms over 640 acres. Table 21 does that and indicates a difference in growth rates between the two CDs.

TABLE 21: Farm size–Percentage of total farms over 640 acres, 1931–1951

	1931	1936	1941	1946	1951
CD #1	44.84	47.22	49.38	54.89	61.21
CD #3	35.18	38.17	35.11	34.81	35.56

Source: Census of Canada 1931, 1941 and 1951;
Census of the Prairie Provinces 1936 and 1946.

The growth of larger units is much more evident in CD #1. The numbers stay remarkably consistent in CD #3 reflecting a slower and more conservative adaptation in the area north of Medicine Hat than is found south and southwest of the city, resulting perhaps, not only from a more hilly, less cultivable terrain, but also from the reluctance of subsistence farmers to give up their rural lifestyle and move to the city. There is no evidence to suggest that the formation of the British Block affected the growth of farm sizes in CD #3. Indeed much of the land taken over for the British Block had already, in the early 1930s, reverted back to the Crown under the provisions of the Special Municipal Areas Act 1934 and that "once the land comes under the control of the [Special Municipal Areas] Board, it is considered public land and is not for sale, and settlement on same is not permitted by individuals coming from outside the area" (Stapleford,1939:81). This conservatism is further reflected by the fact that there were 2.3 times more 160 acre units in 1951 in CD #3 than there were in CD #1.

The final overall view deals with ownership. As will be seen from many of the comments about the acquisition of additional land there are a variety of methods used to purchase the land as well as a variety of ownership arrangements. The relationship of part-owner/part-tenant makes up a significant portion of the ownership in both CDs but may as easily reflect an arrangement of a son buying or renting the land from a parent, or other relative, as it may the more traditional owner/tenant relationship. Table 22 presents the data on these types of land tenure.

TABLE 22: Ownership of land, 1936–1951

	1936	%	1941	%	1946	%	1951	%
CD #1								
Owner	1717	44.04	1751	42.63	1653	46.25	1245	42.74
Manager	32	0.82	18	0.44	12	0.84	34	1.17
Tenant	775	19.88	886	21.57	712	19.92	402	13.80
Part-Owner/ Part-Manager	1375	35.26	1452	35.35	1197	33.49	1232	42.29
CD #3								
Owner	1019	39.57	1242	43.78	1191	47.60	1186	48.59
Manager	16	0.62	29	1.02	8	0.82	35	1.43
Tenant	686	24.70	766	27.00	579	28.14	416	17.04
Part-Owner/ Part-Manager	904	35.11	800	28.20	724	28.94	804	32.94

Source: Census of Canada 1941 and 1951;
Census of the Prairie Provinces, 1936 and 1946.

This table shows that by far the majority of the land, over 80.0 percent in both cases, is either owned outright by the farmers or is in the process of being bought outright or leased on a fairly permanent basis. Respondents to the surveys indicated that leasing was often unofficial and was renewed annually. The Medicine Hat News notes that "farmers are adding to their present acreages or purchasing property which they previously occupied as a tenant" (June 12, 1943).

7.2.2 Farm size from survey

The questions in the survey provided the possibility of dividing land acquisitions into at least two categories, land that was acquired prior to 1940 and that which was acquired after that year. The reason for the division is to attempt to find out whether it is possible to be very definitive about when the farm size started increasing or whether a number of factors occurring during and immediately after the war simply speeded up the process.

When questioned about the acquisition of land 68.6 percent of the respondents indicated that they or their fathers had purchased additional land between first settling and 1940. Most indicated that their family had purchased their pre-emption[37] fairly soon after "proving up"[38] and to that half-section of land was added more as it became available or as arrangements could be made, usually

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37 Pre-emption was the right of purchase of the adjoining quarter-section from the Dominion Government and was made available for $1.00 per acre after title to the homestead had been secured. Pre-emption had been abolished in 1885 but had been reinstated after 1908. (MacDonald,1966). Pre-emption was a United States concept aimed at giving "an advantage, or preference, to the actual settler or tiller of the soil as against the purchaser for speculative purposes" (Webb,1931:403).

38 "Proving up" is explained as follows: "after paying a $10 filing fee, a male over the age of 18 or a widow could get 160 acres fee, if he or she would erect a dwelling on it, reside on it for six months each year for three years, and bring under cultivation 10 acres the first year, 15 acres the second year, and 15 acres the third year. If all these conditions were met, the homesteader then was given free title to his/her land" (Manyberries,1983:390).

of land that had reverted from private to public ownership (Stewart and Porter,1942). Of those who could remember specific dates of land purchases, there seem to have been two particular periods which were most popular, the first between 1925 and 1929 and the second between 1935 and 1939. The first of these coincides with the period immediately following what David Jones (1986) calls the "prairie dryland disaster of 1917 to 1926" when the most serious emigration from the dry southeast of Alberta took place. According to Dawson some of the farmers "added to their holdings during the 1922-1930 period when land prices dropped, and they were fortunate enough to experience two or three good crop years before the onset of the depression in 1929" (1940:96). The second, though more difficult to place, fits with the much smaller movement away from the land associated with the 1930s depression. Some of the small scale farmers who wanted to leave were able to sell to those who were planning to stay. It is significant, referring back to Table 9, that in both census divisions by 1941 more farms were occupied than at any time since 1921. The number of occupied farms in CD #1 rose between 1931 and 1936 and continued to rise through to 1941 while in CD #3 there was a slight drop in the number of occupied farms between 1931 and 1936.

By 1940 all who indicated they had acquired more land had increased the size of their farm to almost one section or 640 acres. Not all the land was contiguous and, indeed, Willis' study of farm fragmentation in the Hilda/Schuler area gives a good overview of the acquisition of additional non-contiguous properties, or as Willis calls them "detached pieces" (1980). It is interesting to note that Carlyle in his study prefers to use the term 'separated' rather than 'fragmented' and maintains that the separated parcels tend to be large and are not excessively and widely scattered (1983:16).[39] Much of the land was purchased for cash, the

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[39] "As used in the Old World, notably in Europe, fragmented farms are those which have been reduced to a size too small to be economically farmed, or which consist of an excess number of widely dispersed pieces or both. The term has, however, been transferred perhaps too hastily to different conditions in the New World, where it has

amount varying considerably from a reported $12.00 per acre for a quarter section in 1915, $10.00 in 1924, $5.00 in 1936, and $3.00 per acre for a quarter section in 1938. Dawson provides some figures for land purchase costs in two locations relevant to the study area. He cites prices in Bow Island at $17.00 per acre between 1907 and 1916, dropping to $14.00 per acre from 1917 to 1921 and dropping further to $8.00 per acre from 1921 to 1931. Figures for Hilda show much the same variation, $8.00 per acre between 1902 and 1906, $13.00 per acre from 1907 to 1911, $15.00 between 1912 and 1916 and rising to $24.00 per acre between 1917 and 1921. That was the high point because between 1922 and 1926 the price had dropped to $11.00 per acre and reached only $12.00 per acre in 1927 to 1931 (1940:306). The pricing cited from the respondents to the survey shows a similar overall trend to that cited by Dawson, though the figures tend to be lower , however, since the responses were based on memory, and depended upon a number of variables, such as quality of land and economic status of the seller, to name just two.

It is not at all wise, therefore, to place too much emphasis on the dollar figures. There were, however, some additional purchase arrangements that were interesting. One farmer, for example, who acquired 2.5 sections of land between 1924 and 1937 indicated that the 640 acres he purchased in 1924 resulted from his paying off the arrears of the previous owner's accumulated taxes. The half section, 320 acres, he purchased in 1927 for $2030, and a further half section he inherited in 1937. There was no indication how he acquired a half section in 1935. The same farmer also indicated that he leased an additional two sections of land, one section from an absentee landlord living outside Alberta and one section from a store owner who lived in the nearby town. In both cases the lease was paid by the farmer providing each owner with 20.0 percent of the grain from that land that was delivered to the elevator. The most common crop share

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been used to describe any farm which consists of more than one piece, regardless of the size of the pieces or their degree of dispersion" (Carlyle,1983:16).

agreement appears to have been one third of the crop to the landowner and two thirds to the farmer, although there is at least one example of a 50/50 arrangement.

Two particular stories reveal the importance that some settlers felt for giving their children a good start in life. In an interview Grimm, talking of the settlers of Russian-German background, suggests "the attitude that they had about developing things for their sons, that they should stay with agriculture, was very important" (Interview, August 19, 1995). Of the two stories, one occurred in the survey, the other in an interview. The survey response stated:

> our father kept buying land from about 1927 to 1934 so he could give each of the four sons as their own a half section of land at a time when they started out for themselves. The accumulation of land amounted to three sections, 1920 acres, in the surrounding district and more was purchased by each son as he became established. It is of interest to note that one brother chose not to farm and that his land was sold to another brother and he was given the cash to start a business in Calgary.

In the interview the farmer made a similar deal for his children stating, "I had four sons and one daughter . . . we were able to get a farm some place to put one of the boys on when they got married and I put them on two quarters everyone. We bought more later but the two quarters were a gift from me."

The acquisition of land continued after 1940. In response to the survey 71.4 percent indicated that they acquired additional land between 1940 and 1960, anywhere from a single section (640 acres) to, in one case 8.75 sections (5600 acres). A great deal of land was available or became available during the 1940s. Land which had been abandoned in the 1930s or had reverted to the government or the finance company in lieu of taxes was already available. Government land was for sale and auction advertisements in the Medicine Hat Daily News give some indication of prices:

> Auction of school lands and provincial lands announced between January 19 and 27, 1949. Price ranges from $5.50 to $8.00 per acre for school lands and from $3.50 to $7.00 per acre for provincial lands (December 18, 1947).

A similar advertisement ran in December 1949, indicating land with no improvement at $5.00 to $6.00 per acre and land with some property up to $12.00 per acre (*Ibid.*, December 31, 1949).

At the same time the early 1940s saw a movement from the land to the towns and cities. When questioned on the reason for this movement by far the most popular answer was that one generation had 'done their bit' and were ready to retire and if there was no family to take over the farm then it was simply put up for sale.[40] One of the interviewees explained the move from the farms in the 1940s in the following way:

> . . . so mechanization came in after the end of the war and that would have meant that now the original settlers were getting older and there was a change in the method of doing things. Mechanization meant they needed to make some adjustment . . . and so people would tend to look at their opportunities . . . not every kid wanted to be a farmer. The old folks would have said they couldn't afford the mechanization thing so their option was to sell up. We shouldn't think of it as a failure when somebody stops farming, rather we should look at it as people assessing their alternatives.

Several examples of this movement off the farm are found in the Medicine Hat Daily News:

> Hilda - quite a few farmers have sold out their farm equipment and livestock through auction sales and are either retiring to the city of Medicine Hat or are taking up other occupations. (November 13, 1946)

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[40] If the farmer had settled the land in 1910, by the time the 1940s rolled around he had spent 30 years farming and was ready to pass on the task to others.

> Farm 12 miles south west of Medicine Hat -half section deeded land, 160 acres under cultivation at $10.00 per acre - six quarters of lease land could be turned over to purchase. (April 1, 1947)

In some cases, of course, the land was being turned over to the family. A report in the Medicine Hat Daily News from Seven Persons states "the original homesteaders are slowly leaving the district and in many cases the younger members of the family are taking over the farm" (October 6, 1947).

An additional factor in acquiring land was the availability of cash. In a report delivered to the Post-War Planning Conference in Toronto in 1943, Professor W. D. McFarlane commented on some of the problems associated with agricultural reconstruction from the farmer's point of view. In part of his report he states:

> farm income must be raised to a level which will afford a standard of living comparable to that of other classes. The farmer has not received his fair share of the national income. In 1940, the average farm income (without deducting operating costs) was about $900 per annum, as compared to $1500 for the industrial employee . . . a way must be found to increase rural purchasing power . . . no self-respecting farmer wants an industry dependent on Government loans (McFarlane, 1943).

As one of the interviewees stated "and then finally you know in the 1940s all at once we started to get up and we got up fast. Prices got better and it didn't take very long before you could help yourself." Most purchases took place in the late 1940s and early 1950s when better prices for wheat resulting from the establishment of the Canadian Wheat Board, better crops and better equipment meant that it was time to reinvest in more land. There were a few purchases in the early 1940s and the Medicine Hat Daily News reflected this by commenting "the prosperous position of the farming community is reflected in the demand for farm lands in this district. The younger men are on the look out for lands of their own" (February 14, 1944). In 1941, for example, one respondent purchased a quarter section of land for $5.00 an acre and indicated that the owner joined the own" (February 14, 1944). In 1941, for example, one respondent purchased a quarter section of land for $5.00 an acre and indicated that the owner joined the army and was no longer interested in farming. The purchaser commented that the land was good, productive and cheap and that he used a family loan for the purchase. A second respondent indicated that he leased three sections (1920 acres) of land after the owners moved away. The arrangement for the lease was cash, at $0.40 cents an acre for a total of $768.00 a year. His particular interest in the land was because it adjoined the home quarter.

Two respondents indicated that after returning from active service in World War II they used the facilities of the Veterans' Land Act[41] to acquire land. In one instance the farmer bought 1.25 sections in 1947 at $5.00 per acre and in the other a section of land on a crop share arrangement. The Medicine Hat Daily News also reports on a returning soldier who bought a half section (320 acres) of land from a local farmer in 1946 and leased a further 3.5 sections for pasture. The veteran's comments were "it's dry land but she's good and with care and attention will give us a living. It was run down a year ago but I'm building it up." Commenting further on the fact that he was ploughing with horses, he added "maybe we'll have a tractor another year, but we've got to start modest" (April 22, 1948). The following week the newspaper pointed out that under changes to the Veterans' Land Act those in spring wheat growing areas would be allowed to pay over time for their land using crop share (*Ibid.*, April 19, 1948). Earlier in the same year the newspaper announced that the first family from war-torn Europe had arrived in Hilda having been sponsored by a local farmer (*Ibid.*, February 27, 1948).

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41 "The Veterans' Land Act received royal assent on August 1, 1942. It provided for the appointment of a Director and empowered him to acquire land and improvements, livestock, farm equipment and commercial fishing equipment, and to sell them to approved veterans to a total value of $4,800.00 per veteran" (Britnell and Fowke,1962:423). The act also provided for loans to purchase livestock and/or land. The act was revised and amended several times particularly to bring the amount of dollars available to a more acceptable level.

There is plenty of evidence from the figures provided by the respondents that the price of land, especially good productive dry land, increased significantly during the two decades, from as little as $4.00 per acre in 1946 to as much as $50.00 per acre in 1960. These figures alone indicate how much more successful dryland farming became over the 20 year period. Some of the land was purchased because it adjoined land already owned. Some was purchased simply because, as one respondent indicated, "I wanted land." One respondent suggested that he needed more land to support a growing family. However, the commonest reason was that the land was good, productive and, above everything else, cheap. Farmers were looking to expand their holdings and the land was available. Whatever the reason the successful farmers of the early 1940s became even more successful as the two decades progressed and they acquired even more land.

7.3 Mechanization

According to Baltensperger "one of the most important causes of farm expansion was mechanization" (1977:256). It was the growing need for labour in the non-agricultural sectors, particularly during and after World War II, and the growing availability of labour-saving farm technologies that prompted farmers to purchase machinery. There is a direct link between farm size and mechanization. The availability of machinery replacing human and animal labour was partly caused by and the cause of increased farm operations. The increasing costs relative to returns meant that to make the operation economic more land was needed and at the same time the speed with which that land could be ploughed, seeded and harvested meant that more land could be farmed more quickly (Carlyle,1983). In other words, mechanization gave farmers greater control over the timing of their operations (Hewes,1979). It is worth recording that the Dominion Agriculture minister in 1941 is reported as having said that he wouldn't have a tractor on his farm since the land was not suitable for a tractor and "it is typical of a good many farms in western Canada" (Medicine Hat News, May 22, 1941). The Minister, J. G. Gardiner, was elected from Saskatchewan, farmed there and served as the Dominion Agriculture Minister from 1935 to 1957. His views on mechanization certainly did not correspond to the views of the farmers of southeast Alberta.

The arrival of machinery in southeast Alberta coincided in large degree with the arrival of the first European and American settlers. Shepard suggests that "the immigration of American farmers to the Canadian plains was paralleled by the expansion of American implement companies into the area" (1986:254), and while there is indeed evidence of such mechanization, it is limited. Local histories detail early mechanization:

> Christ's [Lippert] father bought his first steam tractor in 1919 and Christ bought his first gas tractor in 1923, a "Titan" (Hilda,1974:178);
>
> By 1915 . . . a new threshing outfit was purchased . . . in 1922 a new Massey Harris 12-22 HP tractor and a Massey Harris three bottom plow (sic) were purchased. To this was added a Rumley 22 inch threshing machine in 1924 (Wiedeman,1973:35);
>
> In 1920 Gust, P.O.Johnson and A.P.Anderson bought a 25-45 Rumley oil pull engine and Rumley separator . . . they hooked seven plows(sic) behind it and plowed(sic) seven furrows down to Ole Wicks (Iddesleigh,1961:11);
>
> He earned the name of 'Kerosene Johnny' by purchasing the first threshing machine outfit in the community. A Fairbanks Morse engine and separator was taken delivery of in Seven Persons in the fall of 1916 . . . over the next few years this engine was used for ploughing and some field work (Manyberries,1983:106);
>
> [In] spring [1911] Bill and Henry Krenzke, together with Gust Fyrk, Frank Bower, and Art Welke, bought a big steam engine, the first in the district. They also purchased twelve plows (sic) and a threshing machine. This

> machinery was all brought out from Warner. As well as breaking their own land, they plowed (sic) many acres for others in the community with their steam engine and plows (sic) (Pendant D'Oreille,1970:155);
>
> He started farming with oxen and horses, but soon acquired a huge Rumley tractor and plow (sic) and disc to go with it. He was always on the lookout for things that were improvements on the 'norm'" (Bindloss,1985:117).

However, of those interviewed and surveyed none had mechanization much earlier than 1927, though 22 percent had gasoline tractors by 1931 and the same percentage had combine harvesters.

There are definitely two interpretations as to why there was not more widespread adoption of mechanization in the 1920s in southeast Alberta. The first was that the dryland farmers were too conservative, too 'stuck' in their ways, and very much tied to the old fashioned method of doing things. The contrary view, expressed by Ankli, Helsberg and Thompson, was that the farmers were very skeptical about the mechanical reliability and efficiency of these 'new machines' and recognized the significant investment decisions in purchasing a piece of power equipment (1980:13). They suggested that three conditions needed to exist simultaneously before the tractor could be adopted universally. The first involved the technological development of the machine itself plus the equipment for it to pull. The second the costs involved in using the tractor had to be significantly lower than those of horse operation. Finally, "farm incomes had to be high enough to make heavy capital investment necessary, possible, and desirable" (*Ibid.*:35). In attempting to compare costs of horses and tractors, Ankli, Helsberg, and Thompson concluded that even "by the end of the 1920s operating with tractors cost less than continuing to farm with horses at almost all acreage levels." (*Ibid.*:33) It is interesting to note that, in 1922, a Massey Harris 12-22 tractor sold for $1,200 and in 1947, a Farmall M tractor cost $1,600 (Bindloss,1985). However, what really held up the spread of mechanization was the depression of the 1930s (Friesen,1987; Gray,1967). As Morton suggested "the considerable beginnings of power farming and the mechanization of agriculture was delayed by the depression; capital was not available for the purchase of tractors and machinery" (1985:29). The process of mechanization was not stopped, rather it was slowed down. An additional 23.0 percent of those surveyed indicated they bought gasoline tractors in the 1930s, mostly in the period between 1937 and 1940; and 25.0 percent had purchased combined harvesters during that same period. However, the most important increases in machine numbers per farm have occurred since 1941 (Shaw and Gilstorf,1954). In the 1940s all three of Ankli, Helsberg, and Thompson's conditions coincided and Table 23 shows the mechanization "explosion" that took place between 1941 and 1951 when the value of implements and machinery on farms in southeast Alberta rose by 157.8 percent in CD #1 while the total farm values rose by 97.6 percent, and comparative figures for CD #3 show a 186.2 percent increase for implements and machinery and a 137.8 percent increase for total farm values.

The same kind of growth can be seen when looking at the actual numbers of vehicles. Table 24 shows the number of farm vehicles in the two CDs. These figures show that in 1941 approximately 50.0 percent of the farms had a tractor, actually 58.1 percent in CD #1 and 50.5 percent in CD #3. A smaller percentage had trucks, 37.3 percent in CD #1 and 22.0 percent in CD #3. Even fewer had grain combines, 24.0 percent in CD #1 and 9.3 percent in CD #3. By 1951 these figures had increased significantly. There were more tractors than farms in both CDs indicating that any one farmer might well have more than one tractor. In CD #1 almost all farms had a truck, 99.8 percent, though the figures were nowhere near as high in CD #3 at 66.4 percent. The number of grain combines had also increased significantly constituting part of the equipment in 56.3 percent of the farms in CD #1, and 34.6 percent in CD #3. So there had been big changes in farm machinery.

TABLE 23: Value of implements and machinery, 1941–1951 (including automobiles)

	1941	1946	1951
CD #1			
Total farm values	$41,092,408	$54,555,275	$107,803,963
Implement and machinery values	$6,710,800	$9,251,600	$23,847,143
CD #3			
Total farm values	$20,439,524	$26,171,471	$62,232,320
Implement and machinery values	$3,793,700	$4,887,800	$13,989,143

Source: Census of Canada 1941and 1951,
Census of the Prairie Provinces 1946.

TABLE 24: Farm machinery by Census Division, 1941–1951

	Trucks	Tractors	Grain Combines	Threshing Machines	Number of Farms
CD #1					
1941	1,532	2,387	985	312	4,107
1946	1,787	2,590	1,211	264	3,574
1951	2,906	3,659	1,641	282	2,913
CD #3					
1941	624	1,432	265	361	2,837
1946	720	1,677	413	351	2,502
1951	1,620	2,673	870	454	2,441

Source: Census of Canada 1941 and 1951,
Census of the Prairie Provinces 1946.

The horse was replaced by the tractor and the grain harvester combine became popular as a huge time saver, reducing dramatically the need for human labour (MacEwan,1980). Friesen referred to this enormous increase in mechanization as an "explosion" and suggests that "now farmers could work twenty-four-hour days, if they wished, and till their fields with large implements at speeds four or five times greater than horses could manage" (1987:431).

MacPherson and Thompson contended that the decade of delay was an advantage to the prairie farmers "for the machines that they purchased in the 1940s were far superior to those available before the depression" (1984:23). However, according to a PFRA report "Canadian farms were undersupplied with farm machinery and equipment. The diversion of labour and material to war needs reduced the supply of farm machinery which was not sufficient to meet a rapidly increasing demand for all kinds of farm equipment required for the largest agricultural production possible" (1947:32). As indicated earlier most of the growth in machinery was to occur between 1946 and the mid-1950s. For example, 65 percent of those surveyed who bought tractors in the 1940s bought them after 1945 and the majority of the self-propelled combines were purchased between 1949 and 1955 as were the diesel tractors and the disc-seeders. The problem, of course, was World War II. In 1941, Ottawa placed an official reduction on the production of farm machinery and equipment (Medicine Hat Daily News, October 6, 1942), and there was a significant shortage of repair parts (*Ibid.*, July 14, 1942). In a letter to the editor of Today and Tomorrow in 1943, H. E. Nichols, the secretary of the Alberta Farmers' Union was very concerned about the difficulties farmers were experiencing. His letter stated

> all farmers in the West know that it has been very difficult to obtain machinery and repair parts during the past summer. Some men have not been able to obtain plough shares and many summer-fallows have been worked late or not received the cultivation that was necessary owing to the shortage of machinery and tractor repairs. The Alberta Farmers' Union has received complaints from farmers who have waited for months for repairs and waited in vain (Nichols,1943).

In 1942 quotas were imposed on tractors and combines from the United States, making machinery only available to farmers on a permit system (MacPherson and Thompson,1984). The PFRA reports that

> the situation became somewhat alarming during 1944. The findings of a survey conducted by the Economics Division [of PFRA] indicate that the demand for all kinds of farm machinery and equipment will be quite large for 1946 and 1947 to meet the unfulfilled demand during the war years as well as the need for replacement of worn out machinery kept in use because of an insufficient supply of new machinery. There is also a definite trend towards more mechanization, and greater use of power on farms (PFRA, 1947:32).

So, by 1946, "when purchasing power and adequate supplies coincided for the first time since 1929, the basic devices of the 1920s were available in a wide range of efficient machinery adapted to highly variable agricultural requirements" (Britnell and Fowke,1962:421). In addition, farm income was relatively high and labour was scarce and, when available, expensive, resulting in a great demand for labour saving equipment of all kinds (*Ibid.*:188). One example of home-made equipment was the "stook-sweep" which was "an answer to the farmer's prayer now that help is scarce in the prairies." Developed in Alberta in 1941, there were five or six operating in the province in 1942 and by 1943 there were upward of 400 in operation with a special course for instructing farmers how to build them being held at the Olds Agricultural College. The "stook-sweeps" were pushed by a tractor, and made from old wheels off farm machinery, scrap steel and long 'teeth' made from two-by-four timber. It was claimed that "50 to 70 percent of the man labour required to operate a threshing outfit" could be replaced by this piece of equipment (Government of Alberta, 1943; Monetary Times, 1943b:60).

In a commentary in the Monetary Times in 1943 it was pointed out that finally the government was recognizing the need for farm machinery. It reported that "the recent order of the Farm Machinery Controller doubling the allowable production of farm machinery is a belated recognition of the importance of civilian goods to the national war effort." The controller raised the limit on farm implement production to 77 percent of the 1940-41 average. The article reported that the manufacturers could "turn out approximately 90 percent of the average total weight of machines, repairs and attachments produced in the 1940-41 period" (1943d:28). The supply was not available until 1944 at the earliest and, indeed, for most of the dryland farmers of southeast Alberta it was to be 1946 before the machinery began to arrive.

The arrival of new equipment was a matter of record in the local newspaper:

> Fred Springer has bought a new John Deere tractor with rubber tires, starter and lights—Tony Krassman has bought a John Deere tiller equipped with rubber tires, a first for the district (Medicine Hat Daily News, March 16, 1946);
>
> Many new combines are continuing to arrive in the district this week (*Ibid.* August 26, 1946); and
>
> The self-propelled combine has arrived (*Ibid.* July 16, 1947).

By 1956 in the new CD #1 there were listed 2191 farm owners who owned between them 2,640 motor trucks, 2,970 tractors, 3,071 gasoline engines and 1,667 grain combines.

When asked which single piece of mechanical equipment revolutionized farming in the dry areas, those surveyed indicated that the deep tillage cultivator and the discer seeder were more significant than the tractor or the combine. One respondent stated for example that the development of the one way discer meant that "fields did not have to be burned off in order to cultivate with the old disc and plough". Nevertheless, they all agreed that technology had changed dryland farming dramatically by the mid-1950s and had reduced the risk. As one respondent suggested "in the years between 1940 and 1960 with the advent of 2-4-D, the one-way disc and blade cultivator, Macoun was proved correct." Thus it was possible to cultivate the land more easily to avoid possible soil drifting and retain more soil moisture. It was possible to seed earlier to benefit from early spring rains and it was possible to harvest more quickly, thus avoiding early snowfall or heavy frosts. Mechanization had reduced the need for seasonal labour. It had increased productivity and reduced the cost per unit of output, and it had increased the pressure for the expansion in the size of the individual farm unit (Shaw and Gilstorf,1954). It had also replaced the horse.

7.3.1 The decline of "horse power"

If it is at all feasible to assume that one of the victims in this period of adaptation was hired labour, then an even more conspicuous victim was the horse. Perhaps two sections from interviews best sum up the fate of the horse:

> *Interviewer* . . . I have talked to several people who have told me about exchanging horses for tractors and I asked a lady from down south what it was like to hand over the horses . . . was there a real sense of loss?
>
> *Interviewee* . . . No. No, it wasn't . . . because the horses they had to be fed year round. They ate up about a third of the crop so you lost a third of a crop anyway by having horses. They were slower and took a long time to do something . . . so it was an economic decision.
>
> *Interviewer* . . . No sentimentality?
>
> *Interviewee* . . . No because in those days we had trouble with encephalitis. We lost some horses and since we had a tractor and we had bought that extra piece of land and so on, we needed more power, so it was a thing that just worked together.

Interviewer . . . Do you know what happened to the horses?

Interviewee . . . Oh we're not sure . . . maybe the best ones went to Quebec and the worst ones went to Swift Current for meat.

and

Interviewer . . . so what happened to your horses?

Interviewee . . . well we kept some around, they were handy in the winter time for hauling straw and stuff but they would have disappeared by the middle 50s. We had a couple of riding horses around but the rest went to the glue factory . . . I have never thought about what happened to the horse. Farm boys don't think about those things. Generally speaking farm people are extremely humane with their animals but they don't view them as pets either.

TABLE 25: Number of horses, 1931–1951

	1931	1936	1941	1946	1951
CD #1	45,910	32,504	25,631	14,187	7,205
CD #3	40,092	30,247	25,594	13,783	6,942

Source: Census of Canada 1931, 1941 and 1951,
Census of the Prairie Provinces 1936 and 1946

Table 25 shows the very rapid decline in the number of horses between 1931 and 1951, a decline of 83.5 percent over the 20 year period. The previously related interviews explain most of the basic reasons for the disappearance of the horses. They were expensive to keep; they were slow; and, "when wartime restrictions of the manufacture of farm equipment and machinery, including tractors, were being relaxed," they became surplus to requirements (Britnell and Fowke,1962:277). The question, of course, was what to do with the surplus horses? As early as 1942, the Medicine Hat Chamber of Commerce was discussing promoting the sale of horses (Medicine Hat Daily News, October 16, 1942). MacEwan reports that a proposal to "convert surplus horses to saleable meat" was discussed in 1943 (1980:161). It was not, however, until October 1945 that the Canadian Cooperative Processors Limited opened a plant at Swift Current, with an initial order for 10,000 tons of pickled meat for Belgium, that a process was put in place (*Ibid.*). A second plant was also to be opened later in Edmonton. Not all the horses were sent for slaughter. The Medicine Hat Daily News reports that in 1945 there was a committee in town from the Dominion government to buy district horses and to arrange to have them shipped to France and Belgium. According to the report the horses had to be young, solid, sound and well-broken (August 30, 1945).

By 1949, the Swift Current plant was reporting some supply and demand problems and although it was still advertising for horses in 1951, it closed its doors in 1952,[42] having "pretty well completed the task for which it was organized" (MacEwan,1980:162). Of those surveyed 48.6 percent indicated that in 1940 they had work horses on the farm. Only 21.6 percent raised horses for sale either to Europe or to the United States or to Saskatchewan for food production. One respondent commented on this change by stating that he sold his horses in 1945-46 for "fox meat" when they were no longer needed for farming. Most indicated that by 1950 the only horses that remained on the farms were used for recreational purposes or for rounding up cattle and "riding the range." The 1954 annual report of the Department of Agriculture summed up the decline of the horse in southeast Alberta by stating "continued mechanization of farm operations, coupled with low value of horses, demand for meat horses and lack of interest in breeding, has resulted in a further decline of the number of

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42 "Canadian Cooperative Processors Limited at Swift Current are offering the following prices for horses f.o.b. local points; A's 2.5 cents per pound, B's 2.25 cents per pound, C's 2 cents per pound, off car weights/freight paid" (Medicine Hat News, April 19, 1951).

horses on Alberta farms" (Government of Alberta, 1955:47). The horse was no longer part of the equipment needed to operate a dryland farm.

7.4 Land use

One of the more significant adaptations that began in the 1930s and carried through right into the 1950s involved the preparation of the land for cultivation. In 1951 approximately 41.0 percent of the whole of CD #1 was considered improved land,[43] a figure identical to that in the same census division in 1921, whereas for CD #3 the percentage decreased from 42.0 percent to 29.0 percent primarily as a result of the creation in 1941 of the Dominion Experimental Station for Defence Research established at Suffield, details of which follow later in this chapter. The amount of that improved land that was actually cultivated was about 60.0 percent in total, meaning that only about 22.0 percent of the total land area in both CDs was actually cultivated.

In 1926, Wyatt and Stewart, in summarizing their soil survey of the Medicine Hat area, concluded that "the unmodified grain farming practice cannot be depended upon as a permanent system of agriculture" (1926:55). In their report they talked about the value of irrigation, the importance of summer fallow and the significance of crop rotation, all as methods of preventing soil erosion and soil drifting. Certainly one of the problems of the 1930s involved soil drifting and so one of the premier tasks was to stabilize the soil and reduce such drifting to a minimum. The problem really revolved around the practice of "black" summer fallowing. By the early 1930s about "one third of our land was black summer fallow with a dust mulch cover" (Symes,1986:101). Black summer fallow meant the practice of skipping the planting of a crop, ploughing the land so that the

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[43] "Improved land" means land that has at some time been "broken" or plowed but may not currently be cultivated (Britnell and Fowke,1962).

stubble was turned in and tilling the soil often enough to prevent the growth of weeds. This exposed the soil at the surface, allowing it to dry out and be blown by the wind (Hewes,1979). The principal cause of the breakdown of the soil and thereby the creation of a greater propensity to drifting was the continuous cropping/summer fallowing system that was used (Wyatt and Newton,1926:42). Even in 1987, an article appeared on southern Alberta stating "it is widely agreed that the practice of 'black,' or bare, summer fallowing should be stopped immediately (Stark,1987:22).

The methods for preventing soil drifting presented in Wyatt and Newton's report were in large measure to be adopted by dryland farmers in the late 1930s and 1940s. They included leaving a 'trash cover', or stubble on uncropped land, ridging the soil at right angles to the prevailing winds, alternating strips of crop and fallow at right angles to the prevailing wind (strip farming), rotating crops and irrigating. The two ideas that received the least support were the last two, rotating crops, which farmers chose in large part not to accept[44] and expanding the irrigation areas which was a government 'money' issue. The gap between presenting the ideas and having them implemented simply supported the contention in a scientific agriculture column in the Medicine Hat Daily News that suggested that the gap between agricultural knowledge and agricultural practice was simply too great (July 4, 1941). Symes suggested that two major changes had to be made to tillage methods (1986). The first was the adoption of strip farming which began in the 1917 and was promoted actively by Asael Palmer working out of the Lethbridge Experimental Station. Even though he was aware that any one method of soil management was only a partial solution to the

[44] J.R.Clark, district agriculturalist in Maple Creek, expressed some frustration over the failure of dryland farmers to adopt crop rotation in a conversation with John Bennett. Clark suggested "the farmer tries to coax the same plants year after year to grow although the weather is against him. Eventually the problem of the farmer here is that he is fighting a cyclical variable, he wants to grow the same plants every year although the climate being variable he's best suited to a cycle of species" (Bennett,1962a).

problem it seemed logical to Palmer that each method should be promoted. The second was called 'trash cover' farming and simply meant that the soil was not turned over. The Noble blade[45] with its four foot or eight foot blade which "cuts off the weeds under the surface and leaves the trash–stubble and weeds–anchored in the top layer of the soil," and the deep tillage cultivator with its 16" to 18" shovels, which performed the same task, permitted the farmers to keep their land weed free without exposing the soil to wind (*Ibid.*:102; Gray,1967:230).

Of the farmers surveyed 55.9 percent indicated they had soil drifting problems on their farms, a further 23.5 percent indicated that there was not much problem with soil drifting and the remainder claimed that there was no problem at all. Most of the latter suggested that soil drifting had been a problem in the 1930s but not in the 1940s or 1950s. Several acknowledged that though it was not a problem, it was always a threat. The commonest practice to prevent soil drifting was strip farming with the area of the strip varying between 20 acres and 40 acres, with two of the respondents indicating that if it was particularly dry they used the smaller strip. The second commonest practice involved summerfallowing with a cultivator and included no stubble burning, preserving trash cover, using the Noble blade and deep tillage cultivator, all of which achieved the same result, that of leaving a trash cover on the land surface. Several of the respondents revealed their conservatism with statements such as "never over-tilled, very cautious with equipment I used," "[we did] not work the land more than necessary" and "I took as good care of it as I possibly could all the time." One respondent indicated that he would haul manure to blowing hill tops in order to try and anchor the soil. Another mentioned planting wind breaks and two others turned the land back to pasture by "planting many acres to crested wheatgrass" rather than continue cultivation. Only three of the

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45 Named after its inventor Charles S. Noble who farmed near Nobleford in southern Alberta. According to Asael Palmer, "it is doubtful if any other implement manufacturer or farmer did as much to promote trash-cover farming." (Symes,1986:102)

respondents talked at all about crop rotation, using alfalfa, sweet clover, fall rye or occasionally winter rye in alternate years with spring wheat.

Soil conservation was an issue for almost all the farmers during the 1940s and 1950s and all respondents claimed to take precautionary measures to ensure that soil problems, still a very vivid memory of the 1930s, did not recur. All indicated they had changed their tillage practices using Noble and Victory blades, with the typical response being "the main one was the wide blade cultivator such as the first John Deere blade with 24 inch wide blades, then the now widely used Noble blade with six foot or seven foot blades that came out in the early 1950s." Two respondents, however, indicated different views. One reflected a conservative approach toward government involvement of any kind, a view that was also evident when looking at PFRA work. His comments were that he "grew crops suitable to [his] area [and] rejected government programs which often forced farmers to ignore preservation of their land." The second exhibited a singularly non-communal approach claiming that he "reported neighbors to the RCMP if they let their soil drift, otherwise the whole neighborhood would blow." This latter response was unique, and reflected a view entirely at odds with the co-operative and consensual nature of the remainder of the responses, perhaps indicative of some personal dispute with a neighbour or neighbours.

So, "successful dry farming evolved, characterized by various management strategies with regard to tillage, rotation" and other adaptations (Roet,1985:174) but the risk remained. Not everything had been solved and the Medicine Hat News reported in 1949 "the same old refrain . . . summer fallow drifting again . . . it is amazing that all the plowed (sic) fields are not drifting as there is no moisture whatever in the soil" (September 23, 1949). Later in the same year a further report read "heavy local farm losses when top soil blows away . . . worst dust storm in region since 1937" (*Ibid.*, November 26,1949). The land still needed careful attention despite all the land use and technical adaptations.

"Save the soil" campaigns were promoted throughout the 1950s by the district agriculturalists though most annual reports from the Department of Agriculture indicated limited participation. But the need to remind farmers of the possibility of soil drifting was a continuing task for the district agriculturalists and the difficulties of wind erosion returned in 1956 when the annual report stated "wind erosion took its toll in spite of the fact that most of the soil located in the high wind area is protected by such farm practices that provide for trash cover, strip farming, etc." (Government of Alberta, 1957:20). The dust storms occurred again in late May 1959 and the newspaper spoke out strongly in an editorial against poor farming practices. In part the editorial stated:

> the plea from the provincial Department of Agriculture that sound soil practices be employed, can scarcely be ignored. The frightening thought that nature requires 5,000 years to rebuild an inch of top soil might spur into action some of those whose techniques of cultivation have been lax--to put it mildly. Even with the aid of science, its research and its discoveries, man cannot provide rain whenever he wants it. But cultivation practices, such as those suggested by the district agriculturalist, can reduce the damage done in the rain's absence (Medicine Hat News, June 4,1959).

As Morton suggested "strip farming, the replacement of the plough by the disc, tree planting, are only examples of the ecological revolution in prairie agriculture" (1985:29).

7.4.1 Irrigation

The solution to the problem of the uncertainty of the precipitation in the area and thereby to climatic determinism was simple as far as the Medicine Hat newspaper was concerned. It campaigned vigorously throughout the 1940s to have dominion and provincial governments build irrigation projects east to

Medicine Hat. Irrigation was not a new solution to the problem of precipitation unpredictability. Indeed as early as the 1890s the first irrigated land had been developed near Cardston in southwest Alberta and in 1894 the Dominion government passed the North-West Irrigation Act thus initiating feasibility studies for the development of irrigation projects. The early irrigation systems were developed in the southwest of the province (Bowser, Peters and Kjearsgaard, 1963).

By 1903 the CPR also had an interest in irrigation "to promote colonization and traffic on the three million acres of land it owned between Brooks and Calgary" (Palmer, 1990:120). By 1934 the scheme was to become the Eastern Irrigation District and, "despite the high cost . . . proved its value in dry years, when nearby parts of southern Alberta were too dry for farmers to survive" (*Ibid.*:121). It was quite natural, then, for those east of the irrigation projects to look with some envy at the crops in the irrigated areas and imagine that if only the irrigation would include them, their problems would be solved.

In 1926, Wyatt and Newton had proposed that irrigation would provide a partial solution to the problem of water shortage, claiming that "without irrigation it is necessary to have a considerable portion of fallow, while with irrigation a crop is produced every year. The very poor years are failures under dry farming, whereas they should be most profitable with irrigation" (1926:48). The interest in expanding the irrigation area began again in 1941 when the St Mary and Milk River Development Committee was established by the Dominion government to study the question of irrigation development in southern Alberta. One of the recommendations of the committee was for the construction, at an early date, of a reservoir on the St Mary river to store water for the irrigation projects. The Dominion government, through the PFRA, started work on the reservoir in 1946 and completed the work in 1951. It was the work associated with this project that spurred the Medicine Hat newspaper to urge the governments, both Dominion and provincial, to expand the irrigable area to the maximum and undertake more projects even east of the city of Medicine Hat itself. In 1949, for example, there were 33 editorials as well as numerous news articles promoting the need for and benefits of irrigation. At the same time a debate was raging over whether the Dominion, or provincial government, should provide the funding for the extension of the irrigation system. The debate died down significantly in the 1950s as wheat yields ranged between 14 and 30 bushels an acre for eight consecutive years, 1951 through 1958, but surfaced again in the 1960s as yields dropped once more.

Following the completion of the St Mary's dam in 1951, the irrigation project proceeded from Taber east to Medicine Hat. Figure 5 shows clearly the belt of irrigated land which followed the Seven Persons Creek to the Medicine Hat city boundary. According to Bowser, Peters and Kjearsgaard "recent topographic and soil surveys indicate that some areas that were originally included may not be suitable. Economics will play an important role in the development of this project" (1963:11). Despite all the media hype about the need for expanded irrigation there were experts who seemed hesitant. Gray reported that they

> preached caution. Irrigation was an art that had to be acquired the hard way for it was an axiom of the arid areas that it took two generations to make an irrigator. It was definitely not something that drylanders could pick up overnight and succeed at. So the original suggestion of immediate embarkation on converting dust bowls into water reservoirs was quietly filed and forgotten" (1967:198).

The debate was not just occurring in the Medicine Hat newspaper during the 1940s, there were continuing attempts from other sources to urge the provincial government to increase the area of irrigable land. For example, a proposal was submitted by the Hanna Board of Trade in 1943 requesting the provincial government "to distribute available water supply by natural and artificial channels where necessary throughout a very extensive area north of the Red

Deer River in Alberta and Saskatchewan primarily for the development of the live stock industry."[46] The genesis of this irrigation project was a proposal by William Pearce[47] in 1919. He reported that the dry area from Hanna east to Regina, Saskatchewan, could be irrigated by the South Saskatchewan and Red Deer Rivers. His plan was to supply water for stock watering, irrigation and municipal purposes (Government of Alberta, 1960:111). The project was still being discussed in the mid-1960s when there was talk of diverting water from the South Saskatchewan River through natural drainage channels south of Hilda and Schuler and back north to join the South Saskatchewan River in Saskatchewan. The plan was primarily for stock-watering. It has never come to fruition.

There was also a proposal to expand irrigation east of Medicine Hat, along the Ross Creek between the city and Irvine. A letter from the president of the Ross Creek Irrigation Scheme written to the Minister of Agriculture in 1943 explained that the scheme was "a very urgent case to bring before the proper government, as a post-war improvement for the farmers of the district." The president, Albert Anderson, explained that "the idea was to divide this land in small acreages to be sold to dryland farmers of the district to use for growing fodder crops, thereby getting stock growing stabilized, and a better choice for the farmers to make at least a living from their holdings. Grain farming cannot be depended upon as this year has proven."[48]

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46 A proposal for Post-War Reconstruction in Alberta and Saskatchewan prepared to be submitted by the Public Affairs Committee, Hanna Board of Trade, July 12, 1943. PAA 68.328 172.

47 William Pearce was a public land manager for the Department of the Interior of the Dominion Government in 1874 and was promoted to superintendent of mines in 1884. He was particularly concerned with arid-land administration and developed the federal irrigation and grazing policies in southern Alberta (The Canadian Encyclopedia, Volume III:1378).

48 Hand-written letter from Albert Anderson, president of Ross Creek Irrigation Scheme to Alfred Speakman in Red Deer, October 14, 1943. PAA 68.328 94.

Despite the fact that the debate in the newspaper died down in the 1950s, there was still some limited activity with regard to irrigation concerns because although there had been good precipitation years through the 1950s there were still concerns about the uncertainty of that precipitation and irrigation was seen as a way of eliminating that uncertainty.

The easterly most extension of the St. Mary and Milk River Irrigation system (SMRID) was to reach the city of Medicine Hat (Bowser, Peters and Kjearsgaard, 1963:11). The extension of the irrigable area, however, took time and it was only in 1954 that "for the first time water was delivered to the farmers in the Medicine Hat area and some irrigated crops were produced" (Government of Alberta, 1955:86). Studies continued to take place into the feasibility of expanding the irrigable area in southeast Alberta. In 1958, a committee reported on the possible extension of the Bow River Irrigation Scheme into an area north of the South Saskatchewan River between Medicine Hat and Ralston. The authors of the report saw problems with the extension:

> new developments in Alberta, however, have been conceived in terms of the maximum irrigation possible. It means a change of farming for farmers who battled through the depression and the drought to consolidate their land and to integrate with it crown lands which were given up by settlers forced off the land . . . for some time to come it does not seem to us that the market for agricultural products will be large enough to warrant putting settlers on crown land and taking away valuable grazing land from units which have proved themselves profitable.[49]

So the report goes on to suggest that "no new projects should be contemplated for some time to come." However, there was to be one notable exception. The authors of the report did encourage "stockwatering projects or small scale projects which can provide a farmer in a dry or semi-dry area with the protection

[49] Report of the Irrigation Study Committee to the Government of Alberta, September 19, 1958. PAA 70.414 3061.

of a limited acreage of irrigated land at reasonable cost" for they were seen as a good investment for the farmer and for the country. Thus the extension of the Bow River Irrigation scheme was put on hold and has never been acted upon. In the 1950s the annual reports of the Department of Agriculture noted that "an agreement had been reached with "Ducks Unlimited"[50] in light of the comments from the irrigation study to develop a series of dugouts funded 50/50 by the provincial government and "Ducks Unlimited." The projects could be described as "intermediate size" aimed at conserving an average of 100 acre feet of water (Goverment of Canada, 1959:92). By the end of 1960, 22 such projects had been completed. There was also a series of irrigation pasture projects that were approved by the Provincial Cabinet for the southeast in 1960. In these schemes the land was levelled, all rocks were picked off and the land was cultivated, seeded in fall rye and then irrigated. There were seven schemes ranging in size from 55 acres near Burdett to 635 acres in the Medicine Hat area, the others being at Grassy Lake, Bow Island, Seven Persons and two in the Bow River Development area. Cabinet authorized the spending of $50,000 annually until all seven pastures were completely developed (Government of Alberta, 1961: 173).

Of those surveyed, about 70.0 percent believed that irrigation would indeed have been a satisfactory answer to the "variable and uncertain" precipitation of the area. Significantly those respondents who farmed north of Medicine Hat were much less convinced of the value of irrigation than those living south and west of the city. Their reactions reflected very much the topography of the land they farmed. In the north the land tended to be more rolling whereas in the south and west it was much flatter. Typical of the answers from those living north of "the Hat" were "not in the Schuler area . . . in this rolling country the cost of installing an irrigation system would have been prohibitive," "it would have

50 "Ducks Unlimited (Canada)" is a private agency aimed at conserving wetlands to provide breeding grounds for waterfowl.

been almost impossible to irrigate this part of the country because the river is so far below the lay of the land" and "our area was not suitable for irrigation due to too many hills and rough country." South and west of the city the concerns were more related to water availability and costs, with responses such as "it is much too costly and too much work for the advantage you would get from irrigation," "yes it probably would have helped but there was not a lot of water or lakes to do this" and "the projects that were under discussion at the time were far too expensive to be practical." In addition, several respondents felt that some of their fellow dryland farmers were opposed to irrigation and had decided against having irrigation since they felt that they were better off without it. Three of the respondents believed that having irrigation areas to the west of them, on the windward side, had made a difference to the climate in their own area, as one put it 'water draws water.' When asked why irrigation was not developed more aggressively particularly in the 1940s, at least half of the respondents cited cost as the primary factor, "of costs being prohibitive in relation to land values" and "of lack of government funds to develop such projects." The second factor was the lack of available water and the difficulty of the topography in certain areas. A small percentage of respondents blamed either the Dominion or provincial government for not pursuing the expansion of the irrigation areas more aggressively, some suggesting that PFRA could have played a more active role, others suggesting that the "two levels of government never did a proper analysis of the potential of water" in their area.

When asked whether they had tried small scale irrigation on their own farms either by using the "irrigation spraying pipes and pumps" that were advertized in the local newspaper, or by any other method, some 40.0 percent indicated that they had tried one or more methods. None of those who tried irrigation persevered with it. Comments such as "some of the farmers in this area [Schuler] tried it in the 1950s but gave it up as too much work and expense," "not very good, also too much work for too little return," "tried flood irrigation, got good oats crops," "we tried damming and draining but the area became alkali ao we abandoned it" and "too troublesome and time consuming" suggest that for those who had learned effective dry farming methods the change to the expense and labour of irrigation did not seem logical or economic.

Mel Cameron, the former assistant district agriculturalist in southeast Alberta, appointed in 1958, perhaps summed up the situation best when he was asked the question "would irrigation have worked had there been more money?" He replied

> it could have worked but you see again there is more to irrigation than just getting water on the land. There is maintaining and improving the productivity and there is also a market need for the produce. In some cases you grow more of what you've got and if what you've got isn't making a profit, there is not much sense in growing more unless you get some technological breakthrough or something that means that you can produce it at half the price of somebody else . . . irrigation is high cost, high input and requires a market for specialized crops (Interview, July 15, 1994).

The problem with irrigation in the southeast is explained by Dr. Leonard Bauer of the Department of Rural Economics of the University of Alberta when he states

> when you do a cost benefit analysis on these kinds of things, its pretty "iffy" stuff and if you have got to move water long distances, lift it for long distances and put it on soil that has an alkali[51] problem in the first place . . . then it is just not economic (Interview, July 11, 1994).

Bauer summed up what he saw as the attitude of many of the dryland farmers in the Hilda/Schuler area toward irrigation by saying:

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51 The problem of salinization (alkali deposits) is evident in the southeast and according to some reports has increased significantly due to irrigation and summer fallow (Stark,1987).

> people had figured out the lowest cost dryland farming thing and economics works that way . . . the ones that aren't doing it right die off and the ones that are doing it right they tend to survive . . . the guys who are doing it right now on dryland have figured out the competitive ways of doing it and are unlikely to want to change (*Ibid.*).

Irrigation though promoted as a solution was limited because neither the provincial nor the Dominion government could raise the money. In addition it was not viewed as necessary by many of the farmers accustomed to the dryland conditions.

7.4.2 Rain making

Precipitation is everything to the dryland farmers and on occasions they have gone to extraordinary lengths to try and conjure up more. The story of Charles Hatfield and his 1921 rainmaking experiment at Chappice Lake on the road from Medicine Hat to Schuler is well known to local people (Gershaw,1967; Jones,1986). In 1921 Charles Hatfield, a professional rainmaker from the United States was hired by the United Agricultural Association of Medicine Hat to generate the greatest possible increase in precipitation. He was offered $2,000 for every inch of rain that fell between May 1 and August 1. Interestingly, the long-term average during that period, even in the driest part of the region, was over four inches! Hatfield's 'act' was as follows:

> near a pond or lake and on the highest ground in the vicinity, he erected two to four towers on top of which he placed many shallow pans. . . into the pans he sprinkled a potion of secret chemicals which were connected to earth for what one savant called "radio-activity although it may be nothing more than galvanic electricity" (Jones, 1987:128).

Hatfield collected his $8,000 in 1921. After much muttering of discontent among the farmers of the area however, he returned $2,500 and when invited back in 1922 by the same organization, he declined.

Less well known, perhaps, is a further attempt at rain making in the 1940s. The Medicine Hat Daily News carried a report in 1947 that a group of Medicine Hat farmers wanted to bring a Regina 'scientist' with his "universcope"[52] to Medicine Hat so that he could induce more rain (June 5, 1947). According to the report ten local farmers had paid for him to come in 1945 but the results of the visit were inconclusive and there was no record in the local papers of the visit. Coincidentally in the spring of 1948 the Royal Canadian Air Force (RCAF) decided to try some cloud seeding tests using dry ice. Both experiments took place in June and July and both claimed success. The 'scientist,' Donald Johnston, arrived in early June and the newspaper reported his presence in Medicine Hat on June 8. It suggested that his timing could not have been better since the dried out rye crops were suffering from a severe lack of moisture (*Ibid.*, June 8, 1948).

The first report on the rainmaker's experiment occurred on June 16 when the newspaper reported that it had rained for seven of the last eight days. By mid-July the RCAF was claiming that their dry ice experiment was also working and that the experiment would continue through the next four years. An assessment in the newspaper of the two exercises occurred early in 1949. An article in the January 3, 1949, issue claimed that Donald Johnston and his "universcope" produced 1.75 inches of moisture during the month of July compared to 0.08 inches during the corresponding period the previous year. An editorial in the same paper on April 8, 1949, was entitled "No cloud burst from dry ice," making it very obvious which system the newspaper's editors believed worked best. Indeed by April 20 the newspaper was advocating the return of Mr. Johnston with an article entitled "What is needed is a good old fashioned deluge--why not

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52 "The universcope . . . is a simple device. It consists of two magnets, one fixed, the other swinging freely, and weighted so that it keeps moving like a pendulum, sometimes for hours. This machine, says Johnston, produces a magnetic-electric gravitational pull on the moon as a medium to draw air currents, rain clouds, and rain from the Pacific Ocean and the Gulf of Mexico" (Saskatoon Star Phoenix, June 19, 1958).

bring in Regina's precipitation producer?" There was no further evidence of hiring charlatans to try to influence precipitation supplies, particularly since the precipitation from mid-1950 to mid-1957 proved to be significantly above average. Nonetheless, the rain making strategies, whether successful or not, or whether totally scientific or not, certainly typified the desperation of some of the dryland farmers. It would not be the last time rain making experiments would be attempted in the southeast corner of Alberta.

7.4.3 British Block

In discussing adaptation, brief mention should be made of the decision by the Dominion government in 1941 to take 700,000 acres of land (approximately 30 townships, over 1,000 square miles) out of the hands of farmers and set up a national defence experimental range. The whole area lies between the Eastern Irrigation District and the northward flowing South Saskatchewan River and was classified by Stewart and Porter as comprising Class 1, sub-marginal land (1942). Their classification was based on certain ranges of estimated net revenue and meant that Class 1 land had an "estimated annual production of marketable wheat per quarter available for sale less than 375 bushels, [an average yield of less than two to five bushels an acre], and estimated revenue less than costs" (*Ibid.*:65). Their assessment was that the land was only suitable for grazing. Most of the land was purchased from the Canadian Pacific Railway and the Hudson's Bay Company for $1 an acre (Canadian Wildlife Service,1995). Nonetheless sections of the land had been settled and so when the Dominion government announced on April 11, 1941, that the land had been expropriated "for immediate occupation" and that it was going to be used "as a proving ground for artillery, mechanical transport and explosives," 125 families had to be moved out of the area (Medicine Hat News, April 12, 1941). A brief debate over the removal of the families occurred in the newspaper. Some of those who were to be moved indicated that they had no warning of what was to happen. Others claimed that at least two provincial cabinet ministers had begun negotiations with individual farmers with regard to their removal. But whatever the circumstances, "arrangements will be made immediately to contact all landowners, lease holders and agricultural lease holders within the area and their removal will be effected as quickly as possible" (*Ibid.*). Gershaw suggested that "the government dealt with them [the settlers] fairly generously, for although many were only squatters they were paid for the land just the same" (1967:189). Certainly the Medicine Hat newspaper campaigned for "a fair deal" with editorials on April 30 and May 2, 1941. The settlers received assistance in relocating from the Canadian Colonization Association, which was a land settlement subsidiary of the CPR Company. Some of the settlers moved to Medicine Hat, some went into Saskatchewan and some went to northern Alberta to start over again. The land became known as the 'British Block' because of its World War II function of assisting with the British and Commonwealth war effort. The area has been used continuously as an experimental range, being concerned after World War II with biological and chemical warfare and the effects of shock and blast phenomena. More recently it has, once again, become a training ground for British soldiers. However, farmers and ranchers living around the edges of the 'British Block' have been permitted to graze cattle on parts of the range during the summer months.

7.5 Agricultural diversification

7.5.1 Crop diversification

One of the major problems with a single crop economy in this habitat, according to Bennett(1963), was its uncertain and variable nature which had been exacerbated to some extent by the vagaries of the market place. In describing the changes that have occurred, it is necessary to deal specifically with scientific agriculture and technological improvements, including the development of more specialized crop varieties that proved more suitable to the habitat. Hewes maintained that in the U.S. Great Plains, "the use of improved adapted varieties of wheat has contributed to the increase in wheat yields" (1979:173). Table 26 shows the gradual change over the study period from a virtual single crop monopoly to a more diversified cropping picture.

The problem with relying exclusively on spring wheat was two-fold. The first was its susceptibility to damage by drought, by sawfly and by rust. The second was the price, which, despite the stability created by the establishment of the Canadian Wheat Board, was only to break $2.00 a bushel twice in the two decades from 1940 to 1960, and that was in 1948 and 1949. Yields might be larger in the early 1950s but the cost of farming had increased significantly as a result of mechanization and farmers were looking for better returns. Despite all this, wheat remained the crop of choice.

However, the question of which type of wheat to grow is also relevant to adaptation. The dominant variety in the early 1940s was Marquis, a variety that had been developed in the early 1900s in Manitoba. However, Marquis wheat had one major drawback; it was susceptible to stem rust. This problem caused the agricultural scientists to experiment and in 1931 the Americans released a new variety of wheat that could withstand stem rust. It was called Thatcher (MacEwan,1980). Unfortunately it too eventually proved susceptible to rust and new varieties were developed on prairie experimental farms. The wide variety of wheats that was available is shown in Table 27, which indicates the popular varieties in southeast Alberta from 1944 to 1959. Table 27 shows the decline of Marquis as the wheat of choice and its replacement by Thatcher and Chinook, the latter being solid stem wheat which was not troubled by sawfly. The responses to the survey questions on wheat varieties indicated that 73.0 percent of the farmers tried different wheats namely Chinook, Thatcher, Rescue and Red Bobs. In all cases the farmers were looking for better yields and all claimed they would try new varieties as they came out.

Mel Cameron (1994) explained that there was an enthusiasm amongst the 'innovators' in the community for new things. The provincial government promoted enthusiasm, innovation and experimentation to improve farm conditions. Information on new varieties of seeds and different agricultural practices was distributed by the Department of Agriculture through publications, talks and broadcasts, the latter at first on CKUA radio but later using other radio stations, visual instructions, short courses and field days (practical demonstrations held on the ground). The radio programs started in 1952 and the series was entitled "Call of the Land." The aim of the program was to share new ideas with farmers.

TABLE 26: Percentage of crops grown in CD #1 and #3, 1941–1956

Crop	1941	1946	1951	1956
Wheat	84.3	78.4	71.9	65.6
Oats	3.0	4.9	4.3	4.8
Barley	2.0	4.2	8.3	8.3
Rye	2.6	2.4	4.0	1.4
Flax	2.0	1.4	2.1	8.6
Hay	2.4	4.0	1.4	2.7
Alfalfa	1.7	2.8	2.6	0
Mustard Seed	n/a	n/a	n/a	6.7
Other	2.0	1.9	5.4	1.9
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: Census of Canada 1941, 1951 and 1956;
Census of the Prairie Provinces 1946

TABLE 27: Percentage of major wheat varieties planted in CD #1 and CD #3, 1944–1959*

Variety	1944	1945	1947	1948	1949	1950	1951	1952	1953	1954	1956	1957	1958	1959
Marquis	74	73	56	60	59	57	41	38	35	26	9	9	8	6
Red Bobs	16	16	17	13	8	4	2	2	2	1	1	1	0	1
Thatcher	3	3	5	9	8	12	21	30	28	38	26	29	37	50
Reward	2	1	2	2	2	2	0	0	0	0	0	0	0	0
Canus	5	3	5	4	5	5	5	5	2	3	1	0	0	0
Winter	0	2	4	8	3	1	1	0	1	1	1	1	1	1
Durum	0	0	2	0	0	2	2	2	2	3	18	21	9	3
White Spring	0	0	6	12	0	0	0	0	1	0	1	0	1	1
Rescue	0	0	0	0	0	20	26	22	25	22	10	8	6	5
Saunders	0	0	0	0	0	1	1	2	2	1	1	0	0	0
Chinook	0	0	0	0	0	0	0	0	0	0	34	31	35	30

Source: Alberta Wheat Pool Crop Reports 1944-1959

*(Data for 1946 and 1955 are not available)

By 1956 the program was aired on seven stations, including one in Medicine Hat, 261 times in a year. According to the 1956 annual report of the Department of Agriculture "one of the areas of 'greatest response' was the Medicine Hat area" (Government of Alberta, 1957:186). As well as radio broadcasts there were also regular articles entitled "Farm Notes" and "Science and the Land" in local newspapers. All these programs were aimed at promoting innovations in agriculture. In addition under the agricultural extension services of the Department, farm fairs, tillage competitions, livestock sales, seed fairs, farm and home improvement competitions, junior club display competitions and nuitrition programs were all part of the growth and modernization of agriculture. Cameron explained that one of the reasons for involvement in the 'children's' grain clubs[53] was that parents wanted the newer crops. They were "looking for technology. They were looking for new things. You know down in that part of the country I remember one farmer that I worked with, and no matter where you would meet him, whether it was on the street or at a social function, or wherever it was, the first question he asked you was what was new, and he meant it" (Interview, July 15, 1994). Of the 27 percent who claimed not to have tried other varieties, all expressed satisfaction with a particular variety, usually Marquis or Thatcher. Seed for the crop was usually obtained through the wheat pool or from neighbours though in a couple of situations new varieties were obtained through the grain club.

At the same time as new varieties of wheat were being tried, as Table 26 shows, wheat itself was losing ground. The traditional wheat farmer was beginning to

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[53] Grain clubs were sponsored by different organizations. For example, the 'wheat clubs' were sponsored by the Alberta Wheat Pool, the 'oats clubs' by the United Grain Growers Association, and there were 'barley clubs' and 'flax clubs.' In 1941 the annual report of the Department of Agiculture reported 78 'wheat clubs', 18 'oats clubs', 8 'barley clubs' and 2 'flax clubs' in the province. The purpose of the clubs was to introduce and multiply pure seed of suitable varieties. The "young farmers learn the technique of successfully handling a seed plot" and demonstrate "a practicable method of providing superior seed for use for the farming communities" (Government of Alberta, 1941:18).

diversify his crops. In all cases the motivation was the market place, since dryland farmers were prepared to grow other crops if there was a market available. Oats, for example, never really increased that much in popularity primarily because while wheat was fetching $1.91 per bushel in 1950, oats was only fetching $0.90 cents (Urquhart and Buckley,1965:359) and by 1959 the differential remained the same, wheat $1.67 and oats $0.81 cents. Barley, on the other hand, was more attractive fetching $1.49 at its peak in 1949 and was still at $1.08 in 1959.

As early as 1946 a Dominion-Provincial agricultural conference was recommending smaller acreages of wheat and increased acreages of oats and barley (Medicine Hat Daily News, December 4, 1946). The dryland farmers of southeast Alberta did not respond to such recommendations in any dramatic way reflecting a basic distrust of government's farming suggestions and an interest in growing the crop that would yield the best price with the minimum of effort. In addition, wheat was favoured as a chance cash crop because even in the case of failure as in any grain crop, a certain amount of winter feed is obtained (Janzen and Corben,1950). But the really attractive crop economically was flax which in 1950 was selling at $4.48 a bushel and even by 1959 it was still bringing $3.34 a bushel. The Medicine Hat Daily News urged farmers to grow more flax in its editorials of March 25, 1950 and January 12, 1951 but, as was pointed out in the previous chapter, flax was a troublesome crop to harvest leaving behind trash cover that was difficult to cultivate.

The crop of choice remained wheat and the improved yields in the early 1950s suggested that all the previous problems could be overcome. Even unusual weather conditions could not stop the prosperity that was sweeping the province. Writing in the Monetary Times, Homer Ramage reported

> early frost and snow gave Alberta the worst harvesting conditions in history. The inclement fall weather left the Western Prairies with

> 250,000,000 bushels of moist grain to market before March 31 [1952] and another 285,000,000 bushels in snow-covered fields to harvest in the spring. It was the greatest problem ever to confront a major grain-producing nation. But the problem was licked with the co-operation of farmers utilizing special drying equipment, grain men, transportation companies and Canada's customers who accepted large shipments of "tough" grain . . . as a result Alberta's farmers continue to enjoy a high level of income . . ."(1952:64).

There were other reasons for diversification in the 1950s. The 1952 annual report of the Department of Agriculture records that

> yields were of record proportions, and with ideal harvest conditions elevator storage was filled to capacity, with quotas as low as five bushels in many districts. The movement of grain to markets or to terminal storage had no opportunity of keeping pace with farm harvest operations, consequently farm storage was filled to capacity and in southern Alberta much grain was piled in the fields. By December 31st few elevator points had quotas up to 15 bushels per acre and most of them had much less (Government of Alberta, 1953:8).

With record yields, averaging 18.7 bushels an acre across the southeast, therefore, the handling became congested and farmers were carrying yields over from one year to the next and having difficulty finding suitable storage. And before the 1952 crop could be dispersed there was another record crop in 1953 with even higher yields, averaging 25.7 bushels an acre. The Medicine Hat News reported that the wheat crop in the area for 1953 totalled 12 million bushels worth $22,500,000, and that "the Medicine Hat area while not ordinarily thought of as a highly productive dry farming area, actually is a production and marketing territory of considerable importance" (January 9, 1954). However, the significance of two successive record crops simply compounded the problem of handling and storing the grain. According to the Department of Agriculture crop yields were 40 percent for wheat and barley and 32 percent for oats above the long-term average (Government of Alberta,1954: 5).

The impact of these successive high grain crop yields was significant but as the newspaper stated:

> while many bemoan the fact that Canada enjoys a surplus wheat position and nurses a tremendous carryover of grain, we are among those who wish for another bumper crop. Wheat in the bin is like money in the bank. Admittedly there are major problems of marketing, and only a proportion of our huge annual wheat production can be absorbed within the country, but there is still no cause for lamentation. The storage is a hedge against the cycle of dry years which are bound to return (Medicine Hat News, April 21, 1954).

Domestic and world surpluses of grain, limited purchasing powers of importing countries and increased competition from other grain producing countries resulted in lower prices for grain crops and strictly imposed quotas restricting farm revenue. At the same time costs of labour, services, and goods continued to rise. Plentiful harvests did not necessarily result in prosperity. For example the wholesale price for field products (with 1935-39 = 100) reached a record high of 223 points in 1952 and dropped to 158.7 points in 1953. During the same period the consumer price index stayed around 116-117 points (1949 = 100) (Economic Annalist, 1955:2). So grain farmers saw their income reduced, with no reduction in overheads. Farmers had good crop years but

> the bouyant atmosphere created by high yields was offset by the inability of the farmers to market their grains and by the lower price levels in other farm products. This decline in prices, at a time when the rest of the Canadian economy was enjoying a high level of prosperity, was most depressing . . . (*Ibid.*,1956: 5).

Premier Manning had expressed concern in 1954 that "a wet and backward crop season, coupled with the continuation of marketing difficulties, seriously affected agriculture, our most important industry." In pointing out that only livestock sales held firm during the year, he explained that the revenue from other agricultural products had fallen so badly that the Alberta farmers' cash income declined by approximately 20 percent. This reduction in purchasing power caused a six percent decline in retail trade, especially in the smaller centres (1955: 62). The local newspaper, however, reported that:

> farmers have continued farm improvements as in the previous three years of good crops. Dwellings have been painted, new storage sheds erected and farm machinery and automobiles are of modern vintage. While ready cash is at a premium and credit has tightened in recent weeks, mortgage firms state that district residents 'are not too greatly in debt and liquid assets more than offset credit risks' (Medicine Hat News, August 4, 1954).

The 1955 annual report of the Department of Agriculture suggested that "the farm optimism which has prevailed since the early forties has given way to an attitude pessimistic in nature because of increasing costs of farm operations and because of limited grain markets at low prices" (Government of Alberta, 1956:8). The continuing difficulty in the cash marketing of grain caused a variety of crop diversifications. In 1956, 1957 and, to a lesser extent, in 1958 there was an increase in the growing of durum wheat. Table 27 shows the crop area in CD #1 and CD #3 devoted to durum as increasing from three percent in 1954 to 18 percent in 1956 and 21 percent in 1957. The reason for this increase was that in 1955 the market for durum wheat had opened and "consequently farmers in southern Alberta readily changed at least part of their spring wheat acreage to durum. So, too, in the case of flax"(Government of Alberta,1957: 8). Farmers were also prepared to try specialty crops, though usually only under contract. Some of these crops had a market advantage over spring wheat and they included crops such as mustard, rape, safflower and canary seed. The 1956 census data for the new CD #1 shows increasing crop diversification. Of the total area under crop in the district only 52 percent is in spring wheat, with a further 14.5 percent in the traditional small grains, oats, barley and rye. Other crops grown include durum wheat taking 13.2 percent of the crop land, flax seed at 8.6 percent and mustard seed at 6.7 percent (Census of Canada, 1957: 6-1).

By 1960 there were reports of drought conditions again in parts of southeast Alberta with wheat yields ranging around 13 bushels an acre and by 1961 to below 10 bushels.

During the mid to late 50s two new Dominion and Provincial government aid programs were developed. The first occurred in 1955. Because farmers were unable to sell much of their grain, the Federal government announced a policy in November under which farmers could borrow up to $1500 from a bank of their choice using their stored wheat as security (Government of Alberta,1956:5). The purpose behind this loan was to provide needed cash for the daily operation of the farm and for living expenses until the quotas permitted stored wheat to be sold. There is no indication in any of the surveys or the interviews that any of the respondents took advantage of this opportunity. A second aid program occurred in 1959 as a result of an early snow which resulted in much of the wheat not being harvested. The government of Canada and the governments of each of the prairie provinces introduced an Unharvested Grain Assistance Act. This Act provided funding for survival and "farmers who had less than half of their crop threshed and where the average yield was 10 bushels or less but more than five bushels per acre, or whose crop average was less than five bushels per acre were paid respectively two dollars and three dollars per unharvested acre" (*Ibid.*,1960: 8).

Throughout the 1950s some of the correspondence to the various ministers of agriculture was from people seeking help to buy a farm. It seemed that according to one response to such a letter in 1952 from the Honourable D. A. Ure, Minister of Agriculture, that "the Premier indicated on a previous occasion that we were studying the possibility of introducing legislation . . . to assist young farmers financially in setting up their own farms." However, the letter goes on to explain that "no legislation has been introduced . . . my suggestion [would be] that you might go to a Treasury Branch, Bank or Mortgage Company and seek a loan."[54] Farm purchase legislation was adopted by the Social Credit government in 1957. In August of that year the Farm Purchase Credit Act was transferred from Alberta's Treasury Department to the Department of Agriculture. The plan called for insurance to a maximum of $15,000 on the applicant's life with the Farm Purchase Board being the beneficiary. This insurance scheme, it was claimed, would provide protection for public money and at the same time would give clear title for the land to the applicant's beneficiary. Local Farm Purchase Boards were set up in each district and in the case of the southeast there were individual boards for the County of Forty Mile, which covered the whole of the Municipal District of Forty Mile #2 and also for Improvement District #11 (Government of Alberta,1958: 186-7). By 1960 the annual report of the Department of Agriculture showed the statistics to date on the operation of all Boards of all applications after 1957(Table 28). The number in brackets in the column under "applications" indicates those made in 1960.

TABLE 28: Status of applications to Farm Purchase Boards for County of Forty Mile and I.D.#11, 1960

District	Applications submitted to provincial committee	Approved	Rejected	Withdrawn	Value of Loans	Loans
County of Forty Mile	33 (12)	29	2	2	$341,721	$151,350
ID#11	14 (9)	6	5	3	$95,500	$43,280

Source: Government of Alberta 1961(b)

7.5.2 Mixed farming

An alternative approach in adapting for survival was to change from being simply a crop farmer to being a mixed farmer raising some cattle as a hedge against

[54] A letter dated October 1, 1952 in response to one by Edwin B. Weller of Hanna regarding a request for a loan to purchase a farm. From Miscellaneous "W" file, PAA 72.302 1064

possible failing wheat prices. There appeared to be more stability in livestock prices in the early 1950s as Premier Manning pointed out in his report in the Monetary Times in 1954. That stability lasted throughout the decade and therefore many farmers looking for a more stable source of farm income turned to some livestock marketing. By 1960, the annual report of the Department of Agriculture stated that "revenues from livestock production continued as the steadiest and most readily available source of farm income" (Government of Alberta, 1957:8). This combination of grain and cattle farming Bennett called mixed farming as opposed to straight wheat farming or ranching (Bennett,1963; Scott,1956). This choice of farming style proved particularly useful to the smaller operator who did not wish to risk purchasing, or could not afford to acquire, large amounts of additional land. In a field report, Bennett suggested that

> the rate of economic change from grain to cattle has been highly selective and appears to be directly related in the independent variable of land class or soil type. The more prosperous farmer located in the superior soil zone is less likely to convert to more cattle production, even though he is fully aware of the larger profits, than is his counterpart on poorer land who is struggling against under-capitalization, land shortage, and other problems, and trying to increase his cattle population at all costs. This inverse relationship between land resources and rate of economic change and motivation suggests that resource deficiency (sub-standard soils) acts as a spur to economic change (1962b:2).

The vast majority, 85.7 percent, of those surveyed agreed that diversification was necessary to survive the difficulties of limited wheat quotas and declining prices and they turned primarily to cattle. Of those who indicated that they had not felt it was necessary to diversify in the 1940s and 1950s, all were located in the southwest section of the study area around Etzikom and Foremost. Of those who did diversify 75 percent indicated that they chose to adopt the grain/cattle combination of mixed farming, shown specifically on Figure 5 as the area south and southeast of Medicine Hat, classified as "mixed grain and cattle" and then the area east and north of the 'British Block,' designated "wheat and cattle." Two of the respondents indicated that they went into small cow/calf operations where all the calves were sold in the fall. Others indicated that they had either gone into cattle or had increased their herd somewhat. Some indicated that they had planted some of their land to crested wheat grass and tall wheat grass in order to provide more feed for their cattle.

The creation of community pastures in the 1940s and 1950s, to be discussed later in this chapter, permitted the smaller operator to keep a few head of cattle so that instead of having to rely exclusively on his crop harvest, he had an additional source of income in cattle. For example, Johnnie Stelter "began getting into cattle, little by little, by buying a few cows and calves . . . and . . . ending up with over 100 cows and calves" (Bindloss,1985:324). Over 90 percent of those surveyed and interviewed indicated that they kept some cattle by the 1950s, even though in many cases they had none in 1940. The rise in the number of cattle in the area is shown by dividing the number of cattle by the number of farms, revealing 19 animals per farm in 1941, rising to 69 animals per farm in 1956. The numbers varied from 10 to 12 cattle on the smaller farms to 150 to 200 on the larger ones. While the number of cattle increased between 1941 and 1956 the numbers of all other farm animals declined, pigs by 38.0 percent, sheep by 64.0 percent and hens/chickens by 80.0 percent.

Rees (1988) suggested that what was emerging was an efficient farming system as distinct from a way of life. The animals had been kept because they were needed to provide food for the family but with the advent of automobiles and the construction of gravel roads it was no longer necessary to maintain that food supply which tied people to the farm. Now the food supply could be brought in as needed usually more conveniently and often as cheaply. By the early 1960s sheep had virtually disappeared from southeast Alberta and the dryland farming emphasis was either on large scale, highly mechanized grain farming or on smaller mixed farms where "wheat is invariably the preferred crop, though the farmer's desire to provide sufficient income for his family makes him aware of current lucrative crops. As an insurance against crop failure, these farmers also maintain a small herd of beef cattle" (Flower,1972:719).

7.6 Community pastures

The idea of returning sub-marginal land to the provincial government and removing it permanently from cultivation, emerged again in Saskatchewan in 1936. The term "emerged again" is used because in September 1929 the Alberta government placed under the administration of the Tilley East Area Board "2448 square miles or 1.5 million acres of land" (Jones,1986:183). That board leased a large part of the land it acquired either for private or for community grazing and, in fact, by 1935, almost one half of the land was leased out to 319 individuals. No attempt was made to regrass the land. In 1936, then, the Saskatchewan agriculture minister, after visiting some of the drier areas in the southwest of the province, proposed to the Dominion agriculture minister the possibility of setting up grazing leases. The two governments agreed that the establishment of community pastures, as they were to be called, should be the responsibility of the PFRA, but only if petitioned for by the provinces (MacEwan,1980:156). Neither of the other two provinces agreed initially and, although Manitoba came on side eventually, Alberta refused to either "deed or lease its land to the Dominion government" and stayed out of the plan (Gray,1967:136). Bennett, commenting on community pastures, suggested that it was "a kind of reversion to the old open range principle. This was an ideal principle since it resulted in a kind of automatic balance of pasture utilization, providing not too many stock were congregated in one place" (Bennett,1962[b]). The original plan was that the carrying capacity of the submarginal regrassed lands should be an average of 58 acres per animal per year. By 1950, with careful management of the pastures, that average had been reduced to about 20 acres per animal per year (MacEwan,1980). In Saskatchewan, then, and eventually in Manitoba,

> the PFRA took a different approach to regrassing, seeking out large, contiguous areas of abandoned cropland, buying them from the local municipalities and seeding them down with crested wheatgrass to create pastures for livestock grazing (Gayton,1996:77).

The Special Areas Board created a community pasture south of Bindloss in 1941 on a piece of grazing land known as the Remount Reserve. This land had been set aside by the government to raise horses for the army during World War I but nothing had come of it, so the land had been used by settlers for their cattle and horses (Bindloss,1985:57). With the establishment of a community pasture local farmers and ranchers could, for a fee paid to the Special Areas Board, run their cattle on the Remount Reserve. A range rider was hired to look after the cattle and in 1955 there were between 800 and 900 head of cattle on that particular community pasture and about 50 horses (*Ibid.*:283). Other grazing associations were also established during the 1940s and on into the 1950s. An example comes from one of the local histories, "at the 1938 annual ratepayers' meeting, it was recommended that lands adjacent to Etzikom Coulee, southwest of Foremost should be made into a community pasture area by the Dominion government" (Butterwick,1975:158). As indicated earlier the Alberta provincial government was reticent to give control of its lands to the Dominion government, and so rather than a community pasture under PFRA, a local grazing association would be formed.

An example of the formation of a grazing association can be followed through reports in the <u>Medicine Hat Daily News</u>:

July 8, 1944	The formation of a grazing association was completed at Hilda on Tuesday June 27. The purpose of the association is to operate the

	assist in stabilizing agriculture in the district. It is expected that the lease will be available for the farmers' cattle very shortly.
April 24, 1945	Monday, April 16, will go down as a red letter day in the history of farm co-operation in this district as 72 farmers of the Hilda and Sandy Point districts delivered 600 head of cattle at the corrals at the old Jenkinson lease now owned by the Hilda and District Grazing Association.
Nov. 13, 1946	500 head of cattle rounded up on the Hilda Community grazing lease. This lease is a great asset to farmers of the Hilda and Sandy Point districts and many more farmers should make themselves available to this lease in the future years.

Of the respondents, 47.0 percent indicated they had cattle on a grazing lease at some time at costs that varied from \$0.05 cents per day to \$5.00 per head in the 1940s to \$10.00–\$15.00 per head by the mid-1950s. It would not be correct to assume that the remaining 53.0 percent did not have cattle, rather that in many cases they leased their own grazing land or, on occasion, owned such land. Less than one percent of the respondents indicated they had no cattle in the late 1940s and 1950s. When asked whether the establishment of a grazing lease (or community pasture) could be considered a successful venture, all 47.0 percent who made use of the amenity stated categorically that it was. Perhaps one comment sums up the feeling of mixed farmers in particular toward these grazing associations: "the development of the Drowning Ford Grazing Association twenty five years ago has been a big asset to the district and certainly has supplemented every member's income who has ever used it" (Wiedeman,1973:225).

Increased beef prices also helped out in the late 1940s for those with sufficient stock to sell. On August 16, 1948, the Canadian embargoes on exports of beef cattle and beef to the United States were removed. Of those surveyed, 41.0 percent indicated that the lifting of the embargoes increased prices for beef by as much as \$0.03 cents a pound and, in addition, made marketing beef much easier. The embargoes were reimposed briefly in 1952 when there was an outbreak of foot and mouth disease in Saskatchewan but otherwise the opening up of the United States market provided an additional revenue source for those with cattle to sell. A brief comment from the newspaper in early 1951 on the price of beef indicates the advantage of the smaller farmer moving towards a mixed, wheat/beef, operation:

> the proceeds just received by some farmers for their cattle shipped through the local cooperative [were] fabulous . . . many farmers and ranchers are of the opinion that the exuberant prices now paid for cattle are way out of line with other farm produce and should be curbed somewhat. One 1200 lb. steer nearly brings as much as 20 such steers in 1937 when farmers in Hilda received just one or two cents a pound . . . but the astonishing fact is that only about 20 percent of the farmers have any cattle for sale" (Medicine Hat News, March 14, 1951).

Cattle provided an alternative source of income for many whose wheat yields still provided insufficient revenue for the farm, or where because of quotas, the farmers were unable to sell all their wheat crop.

7.7 Chemicals and fertilizers

Probably the most vehement response on the survey came in answer to question 66. It asked "when did you first start using fertilizers regularly on your fields?" The answer in several cases was written in block capital letters and followed by one or even more exclamation points indicating the unpopularity of the question. That answer was "never." Some respondents were less dogmatic and indicated that fertilizers were not appropriate in dry land conditions, others indicated that they had used them later in the 1960s and 1970s but even in those latter instances there were concerns that fertilizer burned the crop because the land was too hot and dry. One interviewee talked of his only experience with the idea of fertilizer:

> when our boy, the city guy, came out he said to me and his brother "we've got to use fertilizer." "Well," I said, "I'm dead against fertilizers." I says, "I don't want nothing to do with fertilizing. I don't believe in it." But I says, "Jim, there's a meeting at Foremost next week and there's going to be three fertilizer guys there" . . . when he went and found out what the price of fertilizer was he hasn't mentioned the word 'fertilizer' to this day.

This rejection supports a comment in the local newspaper that "nothing in experiments in Swift Current shows that the application of fertilizer to the soil is necessary to ensure a good crop" (Medicine Hat Daily News, June 26, 1945).

But equally it points perhaps to a delay in the use of fertilizer rather than an outright rejection of its use since statistics on sales suggest evidence of more frequent use by the 1960s and 1970s in prairie farming in general (Alberta Land Use Forum,1974; MacEwan,1980; Friesen,1987). There was some indication of the use of animal manure as fertilizer when it was available. One of the interviewees indicated that his father cover the land where soil might blow with pig manure also indicated "that was the only fertilizing we did and I think still in that area [Etzikom] there is very little."

However, there were some chemicals being used. Dr. Leonard Bauer talked about his own experiences as a member of the 4-H club at Hilda when they mixed grasshopper bait with bran and

> you drive around with a pickup truck or wagon and horses or whatever and you toss this stuff, spread this stuff, around the edges of the field so that the grasshoppers would not come wandering in. They would move in from the outside and so you would try to nail them before they got very far (Interview, July 11, 1994).

Grasshoppers had been a curse in the 1930s and were again in the 1940s, so insecticides were used to try and control them. The grasshopper outbreaks, however, continued. The outbreak in southern Alberta that started in 1948 and reached its peak in 1950 declined to a very low mark by 1953. The successive wet summers "in conjunction with extensive cultural and chemical control measures . . . were factors which contributed significantly to the decline in grasshopper infestation" (Government of Alberta, 1954:21). Weed spraying was also started in the mid-1940s. All those surveyed indicated that they used 2-4-D and, for some, it was considered one of the significant changes of the decade. One interviewee and his wife when asked "what was special about the 1940s and 1950s?" responded:

> Oh! the 40s were wonderful.
>
> Oh! I think the change over to mechanization plus the coming in later on of the weed spray and the controlling of grasshoppers and all that. The weed spray started in about 1948/49. Nothing on chemical fertilizers because you have to have enough moisture otherwise it just burns up the crop.
>
> But that was such an improvement, that weed spray. Oh! now you could get rid of Russian thistle.
>
> You see in the 1930s you needed the weeds because that was the only feed for the cattle in the winter. Then, later on, they were a detriment to the crop and you wanted to do without them.

Another interviewee talked briefly about aerial spraying or dusting for weeds though he could not remember too many specifics; however, he did believe that the arrival of spraying for weeds was another reason for not diversifying the crop. He believed that wheat, oats and barley could be sprayed but that, at that time, at least, mustard, rape seed and flax could not be since the spray would kill them. Yet another interviewee termed 2-4-D "a god-send." There was also insecticide used as much of the wheat was treated with a mercury compound of some kind at seeding time.

The chemical age, the results of scientific developments in World War II, was coming to dryland farming slowly, but it was coming in the very late 1940s and on into the 1950s. The information was spread through newspaper advertizing, by elevator agents, by the district agriculturalist, and naturally by word of mouth. If the chemicals did what they claimed they would they were used by the dryland farmers as yet one more method of adaptation.

7.8 Changing farming

The adaptations that were being made on the dryland farms during the 1940s and 1950s led to the emergence of two changes that are still very much a part of what the Medicine Hat News refers to as that "dust bitten, dried out corner of the province" (February 25, 1950). The first was the emergence of classic examples of 'sidewalk farmers.' These are farmers who live in an urban centre and who cultivate the land some distance away, their equipment being stored in buildings on the land and whose sole crops are cereal crops which require no day-to-day management (Kollmorgen and Jenks,1951; Flower,1972; Johnston,1986). There is very clear evidence of the emergence of sidewalk farmers particularly northeast of Medicine Hat in the Schuler-Hilda district as early as 1943. The numbers of such farmers grew in the 1950s though people often moved to the nearest community not necessarily the nearest city. The process was obvious and the Medicine Hat Daily News pointed to at least one of the reasons when it reported that "people [are] leaving the farms for the winter months and moving into town" (April 26,1947) and later that "farmers a long distance from town do not care to repeat the experiences of last winter when roads were blocked for weeks at a time and are planning to spend the winter in Medicine Hat" (October 17, 1947). The step from moving into town in winter was only one away from sidewalk farming. If there was no livestock to be tended, then the farm could be safely left for winter and the family could benefit from the amenities of the town or city. In addition, with many more miles of improved gravel roads and the increasing affordability of car or truck transportation, distance was becoming less of a problem. The centennial histories for Schuler and Hilda provide some examples of the emergence of sidewalk farming:

> They sold out some time later and returned to farming until 1951 when they moved to the 'Hat, farming the place only in summer (Wiedeman,1972:1);
>
> I decided to quit buying grain and we moved to Medicine Hat in 1947. By this time brother Bill could no longer operate the farm, so I farmed it from Medicine Hat (Hilda,1974:158);
>
> In 1943, Carl and Carrie built a home in Medicine Hat. The four younger members of the family attended school in the city. Carl now commuted to his farm (Wiedeman,1973:67);
>
> In 1948 my parents retired to Medicine Hat but my father continued to farm the homestead at Hilda for many years (Hilda,1974: 224);
>
> They remained on the farm until 1941 when they took up residence in Medicine Hat. Arthur continued farming as well as running a tire repair business [in the city] . . . he sold his land in 1971 (Wiedeman,1973:101);
>
> They farmed there until November 1953 then they moved to their new home in Medicine Hat and still farmed for two years from town (Hilda,1974:229).

Yet it was this very emergence of the ability to sidewalk farm which was to lead to the second major change. Swierenga describes it as an agrarian transition, as the process whereby isolated rural communities are transformed into modern cosmopolitan societies (1981:219). In southeast Alberta the "rurality as a distinct way of life" began its decline in the late 1940s and although the process still is not complete the changes from the pre-World War II farming styles have been dramatic (*Ibid.*: 211). The adaptations that took place transformed dryland farming from what in essence, as a result of the depression, had become a form of subsistence farming to commercial agriculture.

The adaptations themselves were often the result of the "frontiersman becoming an innovator" (Webb,1931:385). Many ideas that were to change dryland farming came from individual farmers such as the Koole brothers who farmed north of Lethbridge and who in 1917 invented strip farming (Gray,1967). Their farming practice spread from Alberta into the Great Plains of the United States and eventually was adopted there (Hewes,1979). Another example was the development by Charles Noble in the mid-1930s of the Noble blade which allowed that land to be cultivated while leaving a trash-cover to prevent soil erosion. Other adaptations in Canada came from individuals working out of Dominion Experimental stations. The value of summer fallowing, for example, was tested at Indian Head Saskatchewan Experimental station between 1888 and 1890 and by the turn of the century was in use throughout much of the northwest (Ankli and Litt,1978). Summer fallowing became a common procedure in Montana even while the United States Department of Agriculture was promoting what it considered a less wasteful farming practice, notably crop rotation (Norrie,1977). Another example of adaptation from experimental stations was the development of Marquis wheat in 1909 by Charles Saunders. This wheat variety was to prove popular well into the 1950s. However, the flow of adaptations was not all one way. Norrie suggests that "the flow of agricultural technology from the United States into Canada throughout the settlement period was very significant and rapid" brought primarily by immigrants from the American plains states (1977:144). Syme has a list of equipment developed both for horse drawing and later for tractor pulling which originated in the United States; equipment such as disc harrows, disc ploughs, moldboard ploughs, and one-way cultivators (1986). Many of these pieces of equipment were modified by resourceful dryland farmers "obsessed with the need to find a profitable way of cultivating their land without bringing back another dust bowl" (Gray,1967:233).

As a result of these adaptations, there was, particularly during the 1940s and the early 1950s, a "relatively orderly reconstruction of prairie agriculture" (MacPherson and Thompson,1984:29). This "reconstruction" by a series of adaptations made accessible to farmers and eagerly adopted by them has led to the transformation of the dryland area but it cannot be over emphasized that the climatic hazards still remain and as was proven in the 1980s can still cause major economic upheaval.

So the transition from the "survival" generation which had stayed in dryland farming through the 1930s, using whatever coping mechanisms they could find, such as "off-farm" labour, to the "development" generation was complete, probably by the mid-1950s. The survivors were in place to take advantage of the changes that began to appear at the end of the 1930s. Those changes included cultivation innovations that had been developed to cope with drought conditions; some crop diversification though wheat was never really threatened as the crop of choice; a definite increase in cattle as a hedge against the problems of wheat sales; government assistance to improve farming practices and stabilize crop prices; the availability of mechanization which speeded up the whole process of dryland cultivation; and the availability of cash or credit to acquire more land and thus make the whole process more profitable. The technical adaptations of the 1940s and 1950s were needed to farm the land more economically and more effectively (White,1985). The motive had been to establish "a home and an inheritance"–the adaptations available to those who survived made that process a reality (Bennett,1969:321).

There is little doubt that the principal change which was to propel the dryland farmers into Bennett's 'third generation', where farming was developed to "a modern level of efficiency and productivity" was mechanization (1975:23). It was as a result of being able to cultivate more land, both earlier and more quickly, that farm size increased. Other changes to farming practice were, in some cases, experimental, and in others, provided a possible source of cash if the wheat crop could not be sold. However, none of these factors had the impact that mechanization was to have. Irrigation, although an option, never did become a reality, principally because of a lack of government money, topography, and to a degree, farmer reluctance. Chemicals, apart from weed-killers, were not considered appropriate for extensive dryland wheat production. The real adaptation which moved the dryland farmers out of subsistence agriculture and into the agri-business, was mechanization in all its forms.

Chapter 8

Conclusion

That there was a dramatic change in dryland farming and in the prosperity of dryland farmers between the 1930s and the 1950s, there can be no doubt. As we saw in Chapters 1 and 2 different scholars have put forward different "explanations" of the process involved in this transformation. According to Swierenga it was the result of an "agrarian transition" which he defined as "the process by which isolated rural communities are transformed into modern cosmopolitan societies" (1981:219). Against that, MacPherson and Thompson saw it as being "the relatively orderly reconstruction of prairie agriculture resulting from World War II" (1984:29). Alternatively, Bennett and Kohl claimed it was simply the natural next stage in their three part process of the coping strategies developed by the generations of settlers to deal with changing conditions (1975:23). Finally, there was the view expressed by Cronon, Miles, and Gitlin that it was the last of the "six frontier-to-region processes," the one referred to as "self-shaping," the process which gave the region a special cultural identity (1992:3–27).

The evidence I have presented in this thesis supports the view that, in the first place it was the result of a confluence of a series of events which caused those who wanted to continue to farm to take certain adaptive measures and thus to achieve the maximum benefit of the scientific and technological improvements simply to survive. All the factors came together during the same period, stimulated by wartime activities, to change dryland farming permanently. World War II was the catalyst for that change. As Cronon states "in the change that took place in the 1940s, the impact of outside global activities played a major role" (1992:46). World War II provided the manufacturing base; the aftermath of the war provided markets and the dryland farmers were quick to take advantage of both the machinery and the markets. It was the stabilization of the wheat prices in the 1940s; the availability of machinery; the availability of herbicides and insecticides; and the availability of money, all of which were spurred further by the War and all of which were to provide the necessary adaptations that would change the practice of dryland farming.

So was it the result of external forces such as the outbreak of World War II that caused the transition from survival to development? The war did have a direct impact on the dryland farmer; however, it did not prove to be the bonanza as was first believed by the economists. Wheat prices did increase but they did not break the $2.00 barrier as they had in the latter stages of World War I. The Canadian Wheat Board was established before the war primarily in response to the dramatically low wheat prices in the mid 1930s. The war did result in some diversification. The need for some animal products overseas, in particular pigs, led to some changes in traditional farming practices but those changes proved temporary, for the most part, lasting only as long as the demand existed, and then the dryland farmers reverted to the crop that proved to be least risky and the easiest to grow, namely wheat. One major impact was the availability of labour and it was the scarcity of that labour that led farmers to look for alternate mechanical methods to replace it. Indeed Gilchrist suggested that "the war and postwar demands for manpower have brought about a greater degree of mechanization at a faster rate than might have occurred otherwise" (1955:18). There was a huge unfulfilled demand for farm machinery.

Would it be correct to suggest that the technological and scientific advances surrounding World War II did indeed change the method of dryfarming? The real impact came towards the end of the war when the manufacturing industry could turn its attention from producing war materials to the needs of the home market and the developments necessitated by the war were put to domestic use manufacturing machinery, fertilizers, herbicides and insecticides. Higher prices for wheat, good yields between 1940 and 1943 and stable consumer prices meant that many farmers were able to pay off debts and begin buying up extra land so that when machinery became available there was a real "impetus to satisfy the 'delayed gratification' that had been pent up" since the beginning of the decade (Bennett, 1969:216). The dryland farmers were ready for machinery that would make their jobs easier. They had seen what machinery could do before the war but, in many cases, could not afford to buy it, so when it became available after the war and they had money, or easier access to credit, they wanted whatever they could get and it seemed as if the manufacturing industry could hardly keep abreast of the demand for equipment.

But the question still has to be asked whether the process would have occurred a decade earlier had the price of wheat been stabilized in the 1930s. Was the real cause of the problem the price of wheat during the depression? Certainly machinery was available in the late 1920s and improved dryland tillage practices were being introduced but with wheat as low as $0.19 cents a bushel, the small farmer simply could not survive. The question is relevant because although the price of wheat was stabilized in 1943, the price in 1960 was no higher than it had been on the open market in 1924 and was also $0.38 cents a bushel less than it had been in 1948. However, larger acreages meant that crops of eight to ten bushels an acre were not the disaster they had been on the small quarter section or half section farm when the price was only $0.19 cents a bushel. Would an earlier stabilization of the price of wheat have permitted more of the smaller farmers to have survived? The answer probably is no because there were too many other variables which affected crop yields in the 1930s which science and technology were to help solve in the late 1940s. Nonetheless the possible impact of price stabilization for wheat a decade earlier might well be an area for further research. So the process of developing an appropriate farming style and farm size simply took over in the late 1940s where it had stalled when the depression set in but at a much faster pace thanks to the developments during the war. MacPherson and Thompson referred to this lag as the "decade of delay" (1984:23). Wheat price stabilization precipitated the transition from survival to development. The evidence is clear in Table 18. With a known price for wheat, the risk associated with dryland farming was eased and the farmer, confident of at least a base price for his commodity, was able to look at some longer term plans, especially those related to mechanization.

Homesteaders had fled the land in the 1920s and 1930s and although as evidenced in Chapter 6 some of those who stayed began acquiring land in those two decades, the really rapid growth in farm size occurred in the late 1940s and 1950s, when machinery meant that more land could be worked quickly and efficiently. With more land to cultivate a more extensive type of farming could be practiced and lower yields, as indicated earlier, would still allow a margin of profitability. What was to emerge was a "sleeker, more productive, more specialized farming style" (*Ibid.*:28). Baltensperger suggested that

> farm expansion was made possible by technological developments that permitted farmers to substitute capital for labour. Expansion became essential because larger farms offered a number of economies of scale. Larger farms were more efficient at converting inputs to output, at least up to a point. They also benefited from volume buying and selling,

economies of functional specialization, and reduction of fixed costs relative to total output (1987:257).

But as Bogue suggests "farms were not going to become permanently larger until farm mechanization and the stabilization of the population . . . was well underway" (1981:110). As is shown in Chapter 7 land prices remained fairly stable during and immediately after the war encouraging the more successful farmers to buy out their less successful neighbours, or in many case neighbours who were ready to retire and had no one to inherit their land (MacPherson and Thompson,1984; Myers,1990). Those who remained, it appears "shared a common belief in the values of improvement and expansion" (Farragher, 1992:106) and farm sizes continued to grow. There is little doubt that the size of the farm unit played a major role in the success of the dryland farmer in southeast Alberta. There are suggestions that a half section, three quarters or even a section of this dryland would have been more appropriate for homesteading and would have offered more chance of success in this semi-arid area. It would be interesting to speculate on the potential for success had the original homestead been a larger land unit. Simulations could certainly be done, using the variables of the time, to see what farm size was needed for a sustainable farm. An additional area of research interest would be to trace in detail the growth of a family homestead to its current status as an agribusiness.

Was it the huge increase in the availability of mechanized equipment that was the most important factor? "What started our prosperity," claimed one interviewee, "was the tractor that we bought at an auction sale in 1940 for $305. That and improved yields and better prices, that's what started our prosperity." Mechanization certainly had a major impact. In fact Baltensperger (1987) and Bogue (1981) both put mechanization ahead of increased farm size as the principal factor leading to prosperity, for without mechanization, they claimed, the cultivation of more land was simply impossible. Myers (1990) too suggested that it was technological improvements in farm machinery which encouraged the farming of ever larger areas. The mechanization came to a halt in 1939 and did not restart until after 1946, but once the technology developed during the war was redirected toward farm machinery for home consumption the speed of development was rapid and the desire of the farmers to keep abreast of the latest equipment proved dramatic. The whole impact of World War II, including its effect on prices and the impact of war time demand on the livelihood of these dryland farmers, is an area worthy of more study.

Was it the scientific and technological breakthrough with improved varieties of wheat, with chemicals and fungicides that led to prosperity? MacEwan (1980) suggested that bringing the chemicals to the aid of the farmers proved to be pivotal and he pinpointed 1960 as the crucial year. But dryland farmers although they used chemicals to control grasshoppers and herbicides to control Russian thistle were apparently quite leery of fertilizers. Saarinen supported that view by suggesting that "the practice of fertilization is one which loses its effectiveness when conditions are dry" (1966:86).

Were there other influences which generated prosperity for the dryland farmers? Certainly large scale agri-businesses were developing in place of the family farm by the late 1950s but still in that decade there were many one-section farmers who by their ingenuity were able to stay on the land. They became the backbone of the rural community driving school buses, owning the local grocery or hardware store, running the post office, delivering fresh water to farm cisterns and continuing to farm. And there was another boon for some of them on the horizon. Major oil companies began exploring for oil and natural gas. The exploration in the area started as early as 1948, north of the British Block, and spread across the land in the next two decades. Exploration rights were to provide farmers with unexpected income. Finding oil or natural gas and installing a pump (a donkey engine) meant an annual fee to the farmer on whose land the well was located. This revenue could be significant but most of those surveyed indicated that the benefits of oil or gas wells on their lands, if any, were not felt until the early 1960s. Those who did indicate that wells existed on their property in the late 1950s received annual revenue of around $150.00 per well. However relative to the oil boom that hit Alberta in 1947, "southern Alberta gained little directly from the heavy exploitation of petroleum that occurred further north" (Jankunis, 1972:81).

One thing is certain; in the two decades under study the climate had not modified significantly enough to have a major impact on crop production. The dry 1940s were followed by a series of wet years in the 1950s and drier conditions in the 1960s. The cyclical pattern of alternating wet and dry periods continued unchanged. The weather remained as Fite (1979) suggested "uncertain, undependable and often destructive." Historical micro-agriclimate studies to understand the relationship between weather and grain crops might well prove very rewarding research in the dry southeast.

The farming methods changed with increased availability of machinery, and as a result of the lessons learned from the 1930s about farming practices, they changed too though often only temporarily. Larger crop yields resulted from improved varieties of wheat and better prices from the establishment of a central marketing system. Increased farm size however, did not always encourage more careful attention to the land. Soil drifting conditions resembling those of the 1930s have reoccurred.

All of these factors played a role in creating the relative prosperity of the dryland farmers of southeast Alberta with whom we lived in the mid-1960s. As Sprout and Sprout suggest

> the consequences of achieving a higher level of production per capita is that this enables a people to pay a higher price for overcoming 'natural'

> obstacles which, at a lower economic and technological level [seemed] insurmountable. The more efficient a people's equipment, and the greater their skills, the greater becomes their potential capacity to master the limitations of the non-human environment, and do so at a price compatible with their conception of a tolerable standard of living. (1960:156)

Each dryland farmer, however, developed a farm to suit his personal desires and available revenues. For some it was an abiding faith in the land, that the land could produce, and that one year of successful crops could certainly compensate for two or three years of dry conditions. Their families had built the farm and the persistence, the commitment made to that land and passed on to each generation, had proved important. Even farm families who moved to the city have been reluctant to give up their land and the numbers of sidewalk farmers attest to that attachment to the land. The resources were applied to the land in the context of the particular climatic and soil characteristics found on the individual farm.

The family farm changed from a subsistence farm of the Depression years of the 1930s to a business oriented unit concerned much more with efficiency and effectiveness in the 1950s. In making the transition significant help has been received from various levels of government. The political commitment to avoid the economic and social costs of the 1920s and 1930s meant that grants and subsidies were made readily available to farmers to keep them on the land. By the end of the second decade of the study the subsistence farm was becoming only a memory, though the operation of that farm and, in particular, the role played by women and children, would certainly be worth more study. Machinery replaced people, reducing the need for farm labour. Specialization and transportation reduced the chores that necessitated people being on the farm. The farmers had ceased to be self-sufficient and had become like town or city dwellers, consumers (Friesen,1987). The family farm had become a business rather than a way of life. But equally after so many years of frustration it was quite natural that the surviving farmers would behave like urban businessmen, taking advantage of the scientific changes and directing all their adaptive efforts at efficiency (Bennett and Kohl,1975; Rees,1988). Ultimately the attraction for many was to the urban centres where modern conveniences for the family, especially during the long winter months, made life much less of a hardship. Electricity, telephones, natural gas and radios became available on the farm but for many the isolation of rural life was now unnecessary, farming for them ceased to be a way of life and simply became a means of earning a living. Were these farmers "arcadians" or "imperialists"? They would be the first to admit that they have never conquered the climate and far too often in their enthusiasm they have forgotten the devastation of soil drifting. They would not see themselves as conquerors of the land, but rather as utilitarians seeking a farming life, caught up eventually in the late 1950s and the early 1960s in the urge to modernize. These farmers, in such a marginal region, were especially cognizant of climatic variability and thus were more concerned with survival than wealth, thereby emphasizing risk-avoidance over maximizing outputs (Diggs, 1992). The rural life style, the sense of community, the threshing bees, the beef rings, the community dances, all were gradually disappearing. Those who stayed on the land did so out of "a genuine liking for the country and for the occupation of farming" (Bennett,1969:52).

For those who survived into the 1940s and 1950s, they had done what they set out to do, to establish a home and an inheritance. Survival was the result of their patience and flexibility. They had adapted as quickly and as effectively as they could and had adjusted well to the environmental realities. The general perception of those who farmed the land in those two decades from 1940 to 1960, and who can look back from the comfort of the 1990s, was that it was an exciting, creative period when finally it seemed they had begun to get the upper hand. As one interviewee reflected "prices picked up and returns from work

However, despite all the adaptations, dryland farming remains a variable and high-risk undertaking, for "nothing so dominates life on the plain as rain, or the lack of it" (Fite,1977; Symes,1986). Yet for the farmers prepared to risk the variability of the semiarid climate, the cultivated lands of southeastern Alberta will continue to be attractive because both the terrain and the soil enable a high degree of mechanization, favouring an agri-business approach to dryland farming.

This study is a contribution to the historical geography of the semiarid plains area of North America, and provides for the first time, evidence for and an explanation of the dramatic changes that took place in the 1940s and 1950s in the dryland farming region of southeast Alberta. By conducting a field survey of the living exponents of this human legacy, I have provided an explanation for the sustained farm settlement of an area which many consider should not have been settled in the first place. I believe that the most apt description of the process that evolved in southeast Alberta was that described by Bennett and Kohl as the "third generation", the one that developed dryland farming from the subsistence level to a modern level of efficiency and productivity. With the arrival of mechanization, the stabilization of wheat prices through the Wheat Board, improved varieties of wheat and adaptive farming practices, it was possible for the dryland farmer not to conquer the environment, but rather learn to use it to his advantage. The creative and coping mechanisms that the dryland farmer learned out of necessity and the tools that were made available to him after the end of World War II made the transition possible. The farming pattern was established by the early 1950s and the changes since have been mostly technological. The changes that occurred through the two decades after thedepression were to give southeast Alberta a stable cultural identity, an identity which is still evident today.

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Appendix A–Research Questionnaire

Survival and Adaptation:
An Analysis of Dryland Farming
in the 1940s and 1950s in Southeast Alberta

David J. Flower
Graduate Student
Department of Geography
University of Alberta

87 Glenhaven Crescent
St. Albert, Alberta
T8N 1A6

Reason for the Research

In 1966, my wife and I arrived from England to teach in Schuler, Alberta. Three years earlier, I had conducted some agricultural geographical research in northeast Iran. I was fascinated by the relationship between climate and agriculture that I had seen on the edge of the Iranian desert and some parallels that I thought might exist in the dryland farming region of southeast Alberta. My interest was increased further as I read about the philosophical conflict between Palliser and Macoun over the agricultural potential of the region.

In his book, "Men Against the Desert," James Gray describes the survival and adaptation of the dryland farmers of southeast Alberta and southwest Saskatchewan through the 1930s, 40s, and 50s, as "one of the great Canadian success stories of all time."

Although a great deal has been written about the "dirty thirties," little has been researched or written about those who farmed the land through the 1930s and carried on farming into the 1950s. These survivors, many of whom are still alive, are the focus of this study. The debate over what happened in the 1940s and 1950s may provide a different view of the land and its people.

Apart from some historical questions initially, the remainder of the attached questionnaire relates to the two decades between 1940 and 1960. I would be grateful if you would answer all the questions and would appreciate very much receiving any additional comments that you might like to make on any of the topics. In addition, if you have any documentary material that I might read or view which is related to this period, I would be delighted to make arrangements to see it.

This research questionnaire has been reviewed by the Faculty Review Committee on Human Research Policy and has been approved as being in accord with the procedural and policy guidelines for the University of Alberta. I have enclosed an addressed and prepaid envelope for you to return the questionnaire when it is completed.

If you have any questions or concerns regarding any part of the questionnaire, I can be reached in the evenings and on weekends COLLECT at (403) 458-3245.

Thank you very much for your cooperation. I assure you that all answers will be treated in the strictest confidence and that no individual names will be used in the writing of the thesis, without prior consent.

David J. Flower December 1992

Section 1 ***Historical Introduction***

1. In which year did your family first settle in Alberta?______________

2. On which quarter section of land did they homestead or if they didn't homestead, on which quarter section did they build their first home?

_____ Quarter _____Section _____Township _____Range

3. How much land did they homestead/farm initially?

Quarter section?___________________

Half section?______________________

Other?___________________________

If OTHER, what size was the initial homestead/farm?

____

____

4. From where did the family come to homestead in southeast Alberta? (please give as exact a location as possible)

(A) from another part of Canada_______________

____

(B) from the United States____________________

____

(C) from overseas___________________________

____

5. If in question 4 you answered (A), what was the country of origin of your

family and how long had its members lived there before moving to southeast Alberta?

____

____

____

If in question 4 you answered (B), how long did they live in the United States and from where did they come prior to arriving in the United States?

____

____

____

Section 1 ***The Land***

One of the suggested reasons for the survival of dryland farming was the increase in the size of individual farms. I am interested in finding out whether this reason is valid for southeast Alberta, and if so, whether the land acquired was adjacent to the original farm or whether the farm was fragmented. A second interest is in the possible development of suitcase and sidewalk farming in the study area.

6. Please give the location of the home quarter in 1940.

_____ Quarter _____Section _____Township _____Range

7. Please indicate how many quarters to which you had clear title in 1940, if

possible, their location, the year in which they were acquired and, if at all possible, the approximate price per acre when acquired.

1.____Quar. _____Sect. _____Twnshp. _________Range_______Price
2.____Quar. _____Sect. _____Twnshp. _________Range_______Price
3.____Quar. _____Sect. _____Twnshp. _________Range_______Price
4.____Quar. _____Sect. _____Twnshp. _________Range_______Price
5.____Quar. _____Sect. _____Twnshp. _________Range_______Price
6.____Quar. _____Sect. _____Twnshp. _________Range_______Price
7.____Quar. _____Sect. _____Twnshp. _________Range_______Price
8.____Quar. _____Sect. _____Twnshp. _________Range_______Price

8. In 1940 did you have any land which was leased for crop growing?

☐ Yes ☐ No

If YES–how much land? ______________________________

what was the lease arrangement?

(A) cash rent ☐

(B) share crop ☐

(C) other______________________________________

why was the land being leased?

(A) absentee landlord (outside Alberta) ☐

(B) owner moved away (in Alberta) ☐

(C) land abandoned ☐

(D) lessee could not afford to purchase ☐

(E) other______________________________________

If you answered (C), do you know when the land was abandoned, by whom, and why?____________________________

____

____

9. In 1940, did you have any land under a private grazing lease?

☐ Yes ☐ No

If YES, how much?____________________________________

10. Did you have a grazing permit in:

1940 ☐ Yes ☐ No

1950 ☐ Yes ☐ No

11. (A) Was the amount of land owned affected directly in any way by World War II? ☐ Yes ☐ No

If YES, how?____

(B) Was the amount of land leased affected directly in any way by World War II? ☐ Yes ☐ No

If YES, how?____

12. Were you still farming/ranching the land in 1960?

☐ Yes ☐ No

(A) If NO–did you sell the land? ☐ Yes ☐ No

In what year did you sell the land?______________________________

Why did you sell the land?____________________________________

____

____

Did you lease out the land? ☐ Yes ☐ No

If the land was not sold or leased, how did you dispose of it?__________

____

____

(B) If YES–did you acquire more land between 1949 and 1960?

☐ Yes ☐ No

How much land did you acquire?

____

What was the location of the land, the year of the purchase, and the price per acre that you paid?

1.____Quar. ______Sect. ______Twnshp. __________Range_______Price
2.____Quar. ______Sect. ______Twnshp. __________Range_______Price
3.____Quar. ______Sect. ______Twnshp. __________Range_______Price
4.____Quar. ______Sect. ______Twnshp. __________Range_______Price

5.____Quar. ______Sect. ______Twnshp. __________Range________Price
6.____Quar. ______Sect. ______Twnshp. __________Range________Price
7.____Quar. ______Sect. ______Twnshp. __________Range________Price
8.____Quar. ______Sect. ______Twnshp. __________Range________Price

(If you acquired more than eight quarter sections, please use the back of the sheet to list the remainder of the land acquired.)

(C) If the land was not purchased was it leased:

for cash? ☐
crop shared? ☐
for other?____

(D) How did the land become available for purchase or lease?

____

(E) If you purchased additional land between 1940 and 1960, could you please tell me how you financed the purchase of the land.

(i) general farm revenue ☐
(ii) off-farm employment earnings ☐
(iii) commercial loan ☐
(iv) family loan ☐
(v) government loan ☐
(vi) sale of assets ☐
(vii) other (please specify)____
____
____

(F) What prompted you to acquire the land? Was it:

- (i) adjacent to the home quarter? ☐
- (ii) cheap? ☐
- (iii) good productive land? ☐
- (iv) other? (please specify)____________________

13. How would you classify the type of farming that you practiced in 1940?

- (A) commercial wheat farming? ☐
- (B) cattle ranching? ☐
- (C) wheat farming with some cattle? ☐
- (D) mixed grain farming? ☐
- (E) mixed grain farming with some cattle? ☐
- (F) sheep farming? ☐
- (G) mixed grain farming with some sheep? ☐
- (H) other--what combination?____________________

14. Did your type of farming (as listed in Q. 13 above) change by 1960?

☐ Yes ☐ No

If YES, to what?____________________

15. If you did farm in 1940 but had ceased farming by 1960:

(A) what year did you leave the farm?__________________

(B) what was the total size of the farm when it was sold?__________
____

(C) how much of the land was owned?__________________
____

(D) how much of the land was leased?__________________
____

(E) why did you decide to sell the farm?

- (i) financial difficulties ☐
- (ii) drought ☐
- (iii) better opportunities outside farming in Alberta ☐
- (iv) better opportunities outside farming and outside Alberta ☐
- (v) retirement ☐
- (vi) poor health ☐
- (vii) providing opportunity for younger family member ☐
- (viii) other (please specify)__________________
____

16. To whom did you sell your land?

- (A) family member ☐
- (B) an immediate neighbor ☐

(C) another dryland farmer ☐

(D) someone from outside Alberta ☐

from where did they come?______________________

17. If the land was not sold, was it inherited by a member of the immediate family? If so, by whom (e.g., son, daughter, brother, etc.)

____

____

____

18. If you still farmed the land in 1960, did you live on the farm year round?

☐ Yes ☐ No

If NO–had you moved into the local community?______________________

had you moved into Medicine Hat?______________________

did you move back and live on the farm during the spring and summer?______________________

did you travel out to cultivate, seed, etc. as the season demanded, but returned home each night?______________________

how many miles were you (approximately) from your land?

____

if you did not use the original farm house during the growing period, what happened to it? Was it left to decay, moved elsewhere, used as a granary, etc.? Please specify.

Section 2 **Climate**

In the eyes of many social scientists, the most significant factor affecting farming in the prairies was the climate and, indeed, the debate over whether the land should ever have been settled by dryland farmers is still a matter of controversy. A change in climate might be part of the reason why farming appeared to prosper in the 1940s and 1950s.

19. What follows are a series of comments from a variety of sources about the dry land in southeast Alberta. Would you please comment on each?

(A) "This area has no agricultural future whatsoever."
Captain John Palliser, 1863.

(B) "much of the southern district . . . will yet be known as the best of wheat lands."
John Macoun, 1886.

(C) "in throwing open to settlement the[se] relatively dry regions . . . the Canadian government was taking a great risk."
Gerald Friesen, 1987.

(D) "people believed in the 'next year country,' that every crop they planted might be a 'million dollar crop'.
Jean Burnet, 1951.

20. In the 1940s there was a great deal of talk at local, provincial, and Dominion government levels about increasing the area of irrigated land in southeast Alberta. Do you believe that irrigation would have been a satisfactory answer to the "variable and uncertain precipitation" that typifies the area?

If YES–why was irrigation not developed during the 1940s?

____

____

____

In your opinion, did the fault for failing to expand irrigation into the rest of southeast Alberta rest with:

(A) the Dominion government ☐
(B) the Provincial government ☐
(C) other ☐

If (C), who or what?______________________________

____

____

21. References are made in The Medicine Hat News to demonstrations of "irrigation spraying pipes and pumps" using water from individual reservoirs. Did you consider this, or any other, method of irrigation as a method of improving your crop yield?

☐ Yes ☐ No

If YES– did you actually try small scale irrigation and if so what were the results?______________________________

____

If NO– why not?______________________________

____

____

22. The popular belief is that poor crop yields in the southeast were due to drought conditions–the term drought meaning insufficient moisture. From your memories of the 1940s and 1950s, what were the primary causes of crop failure?

(A) lack of moisture ☐
(B) heat ☐
(C) wind ☐
(D) hail ☐
(E) sawfly ☐
(F) rust ☐
(G) other (please specify)________________________________

____

23. Did you feel that there were any measures that you could take on your farm as a possible protection against drought?

____
____
____
____

24. Did you keep any records of precipitation for your own personal interest during the two decades in question?

☐ Yes ☐ No

If YES– what happened to them?________________________________
____
____

25. There is always a great deal of debate about precipitation in farming circles. *In your opinion:*

(A) Which period of precipitation has the most effect on crop yield–fall and winter, or spring?____________________

(B) How much precipitation is needed to produce a good wheat crop?

____

(C) What are the most crucial periods for precipitation during the year?

____

26. What was the general classification of the soil on your farm–was it dark brown, brown, or grey?____________________

(A) Did you ever get your soil tested in the 1940s and 1950s?

☐ Yes ☐ No

If YES–what were you interested in finding out? ____________

____

____

____

(B) Who tested the soil for you?____________________

(C) Was the soil tested at your request, or was it part of a soil study in the whole area?____________________

____

(D) Did you receive a copy of the test results? If so, what did they show?____

____

____

27. In 1950 in an editorial, <u>The Medicine Hat News</u> referred to southeast Alberta as "this dust-bitten, dried-out corner of the province." Do you believe that adequate attention in terms of funding, research, or practical assistance was provided to the dryland farmers from:

(A)	the Dominion government	☐ Yes	☐ No
(B)	the Provincial government	☐ Yes	☐ No
(C)	municipal governments	☐ Yes	☐ No

Please explain your answers.____________________________________

____

____

Section 3 Survival

The term "survivors" is being used to describe those who settled the dryland areas in the early years of the century, who lived through the 1920s and 1930s and who continued farming through the 1940s and 1950s. This section is an attempt to find out who stayed and why.

28. Estimate the importance of the following reasons for staying in farming after the "dirty thirties."

(1) not important

(2) not very important

(3) important

(4) very important

(A) Because you could not afford to leave the land (i.e., money tied to land)?

____

(B) Because you believed that despite everything that had happened the land would produce good crops (i.e., the will to succeed)?

____

(C) Because all your friends and relatives lived in the area (i.e., attachment to place)?

____

(D) Because despite failures, the land provided security (i.e., economic security)?

____

(E) Because owning land provided social status?

____

29. Were there any pressures to relocate?

☐ Yes ☐ No

If YES– (A) from family?

____

(B) from friends?

____

(C) from government agencies?

____

If there were such pressures, why did you choose to ignore them and stay? ____

____

____

What alternative locations were possible for you if you had decided to relocate? ____

____

____

____

30. Do you believe that for you the ability to survive and continue to farm the dryland had anything to do with:

(A) Previous experience ____________________

(B) Stubbornness ____________________

(C) Ethnic background ____________________

(D) Pride ____________________

(E) Other (please specify) ____________________

____

31. On November 13, 1946, the Medicine Hat Daily News, in its Hilda column, reported that "quite a few farmers have sold out their farm equipment and

livestock through auction sales." Was this a common occurrence throughout the region in the mid-1940s?

☐ Yes ☐ No

If YES–why, having survived the "dirty thirties" and the dry years of 1943–1945, did farmers decide to sell up? ______________________________

____

____

If NO–then what, in your opinion, was unique about the Hilda area for the situation to happen there? ______________________________

____

____

32. In order to survive, did you attempt to diversify your farming with the addition of animals or by experimenting with different crops?

☐ Yes ☐ No

If YES–what animals or what crops and with what success? __________

____

____

33. Was your family able to survive on farm income alone or did survival mean having to earn income elsewhere to supplement farming practices?

☐ Yes ☐ No

If YES–were your additional sources of revenue during the 1940s and

1950s from:

(A) Assisting with seeding/harvesting locally? __________

(B) Assisting with harvesting elsewhere in Alberta? __________

(C) Working in another occupation during the winter months? __________

(D) Travelling with a harvester team to the U.S.? __________

(E) Other (please specify)? __________

____

____

____

If you were involved with off-farm work during the winter months, how was this affected by war-time permits?________________________

____

____

If members of the family went to work in other parts of the province during harvest time–

(A) Which members of the family went? ____________________

(B) For how long? ______________________________

(C) What were the wages like? How much was paid per day in 1940? __________ 1950? __________

34. Did your farm benefit during the 1950s from gas/oil discoveries on your land?

☐ Yes ☐ No

If YES–

(A) How many wells did you have on your land? ______________

(B) What was the cash benefit per year when the well(s) was (were) in place? ______________

35. Was government farming assistance a significant source of annual revenue? ____

____

____

____

(A) Do you remember participating in the wheat acreage reduction plan which lasted from 1941/42 to 1943/44?

☐ Yes ☐ No

If YES–by how much did you reduce your wheat acreage? ______

____

And what did you grow instead of wheat? ______________

____

(B) Did you receive payments as a result of poor wheat yields? ______

____

(C) Did you need to access the "drought bonus" as established under the PFRA in 1939? ______________________________

These measures were implemented to assist farmers in the drier areas– do you consider them to be a factor in your survival? Or was such compensation so small as to be of no benefit?

____

36. Did you take advantage in the 1940s and 1950s of

(A) Farm improvement loan from the government? ☐ Yes ☐ No

If YES–in what year and for what purpose?________________

(B) Aid under the National Housing Act to construct a new home on the farm?

☐ Yes ☐ No

37. Farm labour—did the family provide sufficient labour year round to operate the farm?

☐ Yes ☐ No

If NO–did you use outside paid labour?

☐ Yes ☐ No

did you rely on local assistance?

☐ Yes ☐ No

If you used outside labour, did you employ

(A) Students? ________________

(B) Displaced Japanese? ________________

(C) Military personnel? ________________

(D) Prisoners of war? ________________

(E) Others (please specify)? ________________

At what rate of pay per day were they employed

(A) in the 1940s? ______________

(B) in the 1950s? ______________

when was such help usually needed?

(A) At seed time ______________

(B) At harvest time ______________

38. (A) In 1940, approximately what was the total income needed to keep your farm economically workable?

____

What percentage of that income came

(i) from the farm? ______________

(ii) from off-farm work? ______________

(iii) from government payments? ______________

(B) By 1950, approximately what was the total income needed to keep your farm afloat?

____

What percentage of that income came

(i) from the farm? ______________

(ii) from off-farm work? ______________

(iii) from government payments? ______________

39. The price of No.1 Northern Wheat, basis in store Fort William/Port Arthur rose from $0.70 per bushel in 1939/40 to a high of $1.858 per bushel in 1950/51. Did such an increase in wheat prices

(A) have an impact on your decision to stay in farming? ____________

____

(B) have an impact on your decision to sell your land? ____________

____

(C) have little or no impact because of rising prices in other sectors of the economy? ____________________________

(D) along with improved consistent yields, provide you with the income, and thereby the opportunity, to expand the farm? ____________

____

40. Was the establishment of the Canadian Wheat Board as a marketing agency a benefit to you as a farmer?

☐ Yes ☐ No

Please give reasons for your answer. ____________________

____

____

____

____

Was there any financial advantage to you in receiving initial, interim, and final payments from the Canadian Wheat Board for crops sold by them?

☐ Yes ☐ No

41. If the price for No.1 Northern Wheat, basis Fort William/Port Arthur in 1950/51 was $1.858 per bushel . . .

What was the price you received on the farm? ________________

Why the difference? ____________________

____

____

42. Could you name a single factor which, in your mind, turned things around for the farmers in the 1940s and 1950s in the dryland area of southeast Alberta? ____________________

____

____

____

Section 4 Adaptation

Because of the difficult farming conditions in the 1930s, changes in farming practice occurred. These changes, whether in crops, animals, mechanization, or fertilizers, all would be classed as adaptations to the environmental conditions. This section aims at exploring some of these adaptations.

43. Did you consciously change your farming style by the end of the 1930s.

☐ Yes ☐ No

If YES–How? ____________________

____

____

____

____

44. What changes, if any, in the types of crops grown occurred between 1940 and 1960? Please give approximate percentages of land devoted to crops.

	1940	1950	1960
Wheat	________	________	________
Barley	________	________	________
Oats	________	________	________
Flax	________	________	________
Spring Rye	________	________	________
Winter Rye	________	________	________
Mustard	________	________	________
Other (please specify)	________	________	________

45. During the 1940s and 1950s, did you experiment with any crops other than wheat?

☐ Yes ☐ No

If YES–what and why? ______________________________

____

____

46. Did you ever consider, for example, growing flax, which by 1947 was fetching $5.00 per bushel?

☐ Yes ☐ No

If NO–why not? ______________________________

____

47. Did you practice mono-culture, that is growing only one wheat?

☐ Yes ☐ No

If YES–why? ______________________________

____

48. Was there a temptation during this period after a particularly wet fall/winter to seed every possible acre of land?

☐ Yes ☐ No

If YES–did you sow or not sow every available acre? ______________

____

Why? ______________________________

____

49. Did you have animals for your own family use (i.e., not commercial use)?

	1940	1950
Milk cows	______	______
Beef cattle	______	______
Sheep	______	______
Pigs	______	______
Hens	______	______
Other poultry	______	______

50. Did you keep animals for commercial purposes? (Please give approximate numbers.)

	1940	1950
Milk cows	______________	______________
Beef cattle	______________	______________
Sheep	______________	______________
Pigs	______________	______________
Poultry	______________	______________

51. If you kept horses, did you raise them for sale?

☐ Yes ☐ No

If YES– did you sell horses just after World War II for shipment to Europe? ______________________________

____

did you sell horses to Saskatchewan for food production?

____

____

did you sell horses to the United States (in particular California)? ______________________________

____

If you did sell horses, about how many and how often and what kind of price did you get for them? ______________________________

____

52. With regard to raising cattle, did the opening up of the United States market in 1947 make a significant difference to your enterprise?

☐ Yes ☐ No

If YES–in what ways? ______

If NO–why not? ______

53. Did animals become an increasing part of your farm operation between 1940 and 1960, or a lesser part? Why?

54. Was soil drifting a problem on your farm?

☐ Yes ☐ No

What measures, if any, did you take to attempt to stop soil drifting? ______

____

____

55. Was the issue of soil conservation one with which you concerned yourself in the 1940s and 1950s?

☐ Yes ☐ No

If YES–did you do anything about it?

☐ Yes ☐ No

If YES–what? ____

____

____

56. Did you hear of or own a Graham-Hoeme plough-cultivator, which it was claimed would prevent soil erosion?

☐ Yes ☐ No

57. Did you ever purchase any special piece of equipment that was marketed as aiding in preventing soil erosion or soil drifting?

☐ Yes ☐ No

58. Did you employ any particular ploughing practices or tillage practices which were aimed at preventing soil erosion or soil drifting or were supposed to assist in retaining moisture in the soil?

☐ Yes ☐ No

If YES–what were they? ______________________________

____

____

____

59. How did you learn about changing farm methods during the 1940s and 1950s?

(A) From your neighbors? ______________________________

(B) From PFRA? ______________________________

(C) Through agricultural meeting sponsored by experimental farms? ______________________________

(D) From the district agriculturalist?

____

(E) From Wheat Pool lecture/film show?

____

(F) From a farm demonstration by a commercial company?

____

(G) Other (please specify)?

____

____

60. Did you use the services of the PFRA in your farming enterprise?

☐ Yes ☐ No

If YES–for what purpose?

(A) Dug-out? ____________

(B) Shelter belt? ____________

(C) Land purchase loan? ____________

(D) Information? ____________

(E) Other (please specify)? ____________

____

If NO–why not? ____________

____

61. Mechanisation increased significantly during the 1940s and 1950s. In what year did you purchase your first:

(A) Gasoline tractor? ____________

(B) Combine harvester? ____________

(C) Self-propelled combine? ____________

(D) Diesel tractor? ____________

(E) Disc-seeder? ____________

How was it paid for? ____________

____

62. Was there any other commercial equipment which became available during the 1940s and 1950s that assisted you in becoming a more efficient farmer? ____________

____

____

____

63. Was there one piece of mechanical equipment which, in your mind, revolutionized farming in the dry areas of southeast Alberta and, if so, what was it? ______________________________

____

____

____

64. During the 1940s and 1950s, did you experiment with different types of wheat?

☐ Yes ☐ No

If YES–what varieties? ______________________________

____

Why did you try them? ______________________________

____

Were they successful? ______________________________

____

If NO–why not? ______________________________

____

____

65. From where did you obtain your seed? ______________________________

____

Was it paid for when it was picked up or were some other arrangements made for payment? ______________________________

____

66. When did you first start using fertilizers regularly on your fields? ________

____

What other chemicals, for example, for weed control, did you use in the 1940s and 1950s and approximately what year did you first use them?

____

____

From where did you purchase these chemicals? ____________________

____

Where did you learn about them? ______________________________

____

What kind of payment arrangement did you have with the supplier?______

____

____

67. Were you involved in any way with the operation of a community pasture?

☐ Yes ☐ No

If YES–
- what was its name? ______________
- when was it established? ______________
- how many cattle did you keep there? ______________
- what were the costs? ______________

was it, in your view, a successful venture? ____________

Thank you very much for taking the time to answer this questionnaire and thus assist me in my research project. Please feel free to add any additional comments, observations, or information.

Comments, observations, information