PROCEEDINGS

OF THE

FIRST INTERNATIONAL CONFERENCE

OF

AGRICULTURAL ECONOMISTS

HELD AT

DARTINGTON HALL

TOTNES, DEVON, ENGLAND

AUGUST 26 TO SEPTEMBER 6, 1929

The Collegiate Press

GEORGE BANTA PUBLISHING COMPANY

MENASHA, WISCONSIN

1929

FARM MANAGEMENT RESEARCH IN SASKATCHEWAN

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SASKATCHEWAN is the central province of the Canadian prairies. It is bounded on the south by the northern limits of the states of Montana and North Dakota. On the east is the province of Manitoba, and on the west, Alberta. The northern half of the province of Saskatchewan has little agricultural significance at this time.

The agricultural area of the province is about 300 miles north and south, by 400 miles east and west. Official estimates claim that about fifty-eight million acres are suitable for cultivation, of which about half (26.6 million acres) has been prepared for crops.[1]

For many centuries the North American Indians had been the sole occupants of Saskatchewan. Indian names appear frequently on maps of the province. Trading posts had been established by agents of the Hudson's Bay Company many years before Confederation. To oppose settlement of the prairies in organized revolt, Riel staged the first rebellion in 1869. After a moderately quiet spell, during which settlement gradually spread westward, Riel led his second rebellion in 1885, which was the last stand of the primitive order resisting the settlers. News of these conflicts spread widely, advertised the territories, and helped in settlement.

When the eastern provinces were confederated in 1867, the new Dominion acquired the unorganized British possessions of western Canada. To induce British Columbia to enter Confederation, the Dominion agreed, in 1871, to complete a transcontinental railway line within ten years. The railway started as a government project in 1874, but little progress was made during the next six years. In 1880, to hasten the project, a contract was made with the Canadian Pacific Company to complete the line before 1891. It was actually completed by May 1, 1885. For its work the company received some $25,000,000 cash, and 25,000,000 acres of land. This railway was built through Saskatchewan about 1882, and helped materially in the settlement of the province.

The development of Manitoba preceded that of Saskatchewan.

[1] Report of the Secretary of State, Department of Agriculture, Regina, Saskatchewan, 1928.

For many years it contributed much of the world's finest hard red spring wheat, and gave its name to the wheat grades of western Canada. The center of Canadian wheat production has since moved westward to Saskatchewan, which, with Alberta, produces the bulk of the hard spring wheat of the prairies.

Manitoba was recognized as a province as early as 1870. Saskatchewan developed later, not being created a province until 1905, when its population was about a quarter of a million. Nearly two-thirds of the people had been gained by immigration during the preceding five years.

Immigrants continued to settle in Saskatchewan in large numbers until the World War commenced. By 1916 the population was nearly 648,000, and most of the desirable crown lands had been appropriated through homesteading. The population in 1929, is estimated at about 900,000 and the number of farms at about 118,000. Between 1921 and 1926, according to the data of the Census, the number of farms in Saskatchewan had decreased by some 1,500, with an increase in the total land in farms, and in the average size of farms.

TYPES OF FARMING IN SASKATCHEWAN

The agricultural section of the Province of Saskatchewan comprises an area of some 100,000 square miles, within which there are six major soil belts. The extents and general locations of these belts are indicated in figure 1. The major types of farming are linked up with the natural conditions of soil and climate. The northern bush lands play little part in farming, and generally support heavy tree growth. The most northerly agriculture which is in any way extensive is established on the wide stretches of black park lands. Extensive prairie belts comprise the balance of the area.

The natural vegetation varies from the sparse growth of short grass on the semi-arid plains of the southwest to the generous park and bush growth of the north and east. The highest precipitation is in the east and the lowest is in the southwest.

The high winds from the south-west which pass over the prairie belts are hot and dry. They cause rapid evaporation and seriously restrict plant growth. Although these winds affect the whole province to some extent, they are generally most severe in the southwest, gradually decreasing in severity with further travel.

Within the major soil belts there are very wide variations in soil character and topography. The best lands for farming are the level or slightly rolling clay or loam soils situated on satisfactory subsoils. Coarse sand or gravel subsoils permit the dissipation of soil moisture, impairing plant growth.

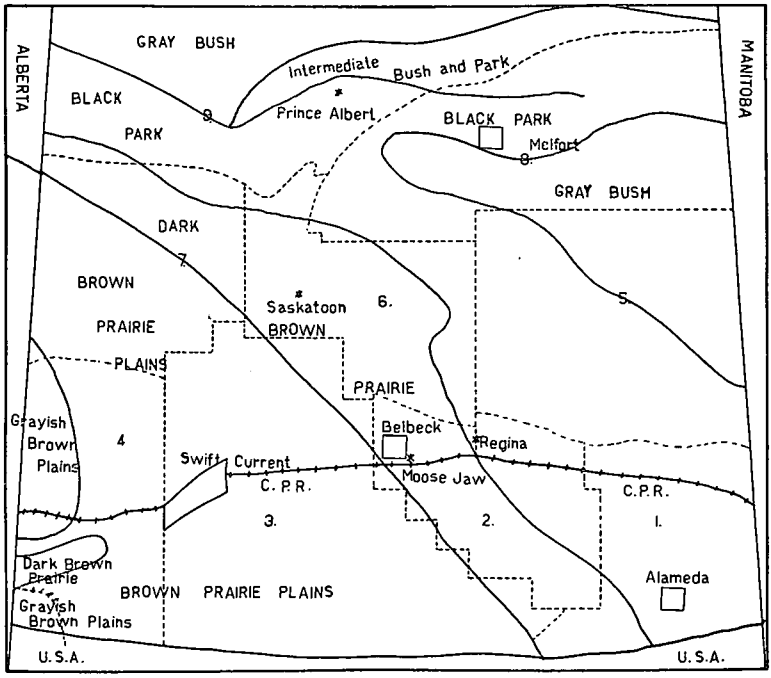

FIGURE 1. CROP DISTRICTS AND MAJOR SOIL AREAS OF SASKATCHEWAN

Heavy lines indicate the approximate boundaries of the major soil belts. The numbers refer to crop districts, the boundaries of which are shown with dotted lines. The blocked sections at Belbeck, Melfort, Alameda and Swift Current show the areas included in the farm business surveys.

Wheat is grown in Saskatchewan wherever practicable. It is subject to the limitations of late spring and early fall frosts, wheat stem rust and other plant diseases, and insect pests. The best pasture and forage crops are found in the more humid areas, but even with possibilities of considerable livestock enterprises, wheat and other grains provide the major portions of the cash income of the farmer.

On some of the sandy lands of the southwest, fall rye and livestock enterprises have been found the most satisfactory, particularly during seasons of limited rainfall. The desire to grow wheat persists, and following a few seasons of comparatively generous rainfall, wheat takes the place of rye, usually with serious financial consequences.

The driest and most broken lands find their best uses as ranges for stock. Many areas which made satisfactory ranges were broken up into farms for which they were quite unsuited, usually being abandoned after many years of discouragement. Personal, social, and economic losses resulting from this mistaken land settlement policy have been tremendous.

Two years after the creation of the province, the University of Saskatchewan received its charter. Instruction commenced in temporary quarters in 1909. The first buildings were completed in 1912. From the opening of the University the College of Agriculture has been included with the other colleges on the university campus at Saskatoon.

The Department of Farm Management was provided for in 1925. Course work and general departmental activities occupied most of the time of the first year. The collection of data by farm business surveys commenced the following summer.

The summer of 1926 was a busy one. Surveys were made on the heavy clay lands of the Regina plains, and in the northern branch of the park belt. Both areas had been included in soil surveys. The districts were fairly well established and the farmers were all English speaking. Two students, graduates of the College of Agriculture, assisted in the collection of data.

The Belbeck district, north of the city of Moose Jaw, was visited first. The soil conditions of this area are quite uniform, and similar to many areas of the Regina plains. The results obtained at Belbeck are free from many influences found where conditions are less uniform. In some respects this uniformity permits the study to be used as a check for succeeding studies.

After completing the field work of the Belbeck farms, the party moved to Melfort and collected reports of about one hundred farms. This area is a successful settlement of English speaking people on the good soils of the northern park belt.

During the winter of 1926-1927 the data of the Belbeck survey was prepared for analysis, and a report was published as

Agricultural Extension Bulletin No. 37 of the University of Saskatchewan. The report of the Melfort area was delayed by other work until the following year, when it appeared as Bulletin No. 43 of the same series.

The Alameda district, in the southeast corner of the province and near the south end of the park belt, was visited for a farm business survey in 1927. Data were secured from one hundred farms. The report covering this area will be published shortly.

The field work of a farm business survey was undertaken in the Swift Current-Gull Lake district, in the brown plains belt, during 1928. Progress has been made with this study, but publication of the report is not expected before 1930.

The season for field operations for Saskatchewan farm surveys is limited to the latter part of June, July, and the early part of August. This is the period between the completion of seeding and the commencement of harvesting. Saskatchewan has dirt roads which are satisfactory in dry weather, but after spring thaws or heavy rains they are usually difficult to travel. Farms are large, and traveling makes heavy demands on time and funds.

The numbers of farms visited have decreased somewhat with successive surveys in spite of efforts made to increase them. A larger number of farms would be desirable. In the first surveys attempts were made to secure as many farms as possible within the area. Some omissions were necessary. The last field study made in the Swift Current-Gull Lake area, included only farms reasonably successful during the preceding financial year. Frost and hail had played havoc with crops on many farms in this district in 1927, and these were not included. Other complications included community settlements of Mennonites, language difficulties, and abrupt topography and soil variations.

STATISTICAL SUMMARY OF SASKATCHEWAN FARM MANAGEMENT STUDIES

A summary of the studies made in Saskatchewan up to 1929, is given in table 1. It permits a rapid survey of the different areas, and of the major types of farming of the province. In general, rainfall is the major limiting factor to high crop yields in each of these areas. Moisture is usually ample if conserved, and inadequate if permitted to escape. Evaporation makes great differences in productive possibilities.

Weeds dissipate moisture rapidly, as well as deprive crops of

Table 1. Statistical Summary of Farm Management Studies in Saskatchewan

	Belbeck	*Melfort*	*Alameda*	*Swift Current*	*Swift Current*
Crop year studied	1925–26	1925–26	1926–27	1927–28	1927–28
Soil	Heavy clay	Silty clay loam	Loam	Loam	Sand
Topography	Level	Slightly rolling	Slightly rolling	Rolling	Rolling
Field obstructions	Free	Scrub, wet spots	Scrub, wet spots	Miscellaneous	Miscellaneous
Rainfall, annual (inches)	14.6	14.9	15.0	14.8	14.8
Rainfall, April-July (inches)	7.7	9.8	9.0	7.8	7.8
Windiness and evaporation	Medium	Moderate	Moderate	High	High
Growing season (days)	120	110	120	120	125
Frost free period (days)	97	80	90	96	96
Natural vegetation	Short prairie grass	Trees, good grass	Trees, good grass	Short grass	Short grass
Quality of pastures	Poor	Fair	Fair	Poor	Poor
Water supply	Ponds—poor	Sloughs, rain water	Wells—good	Wells—fair	Wells—fair
Farms studied	119	106	100	82	14
Total farm area (average number acres)	487	465	563	772	713
Cropland (acres per farm)	448	324	417	598	540
Crops (acres per farm)	289	269	310	399	414
Wheat (acres per farm)	207	157	136	318	284
Oats (acres per farm)	59	62	80	62	56
Barley (acres per farm)	16	34	43	1	
Flax (acres per farm)	2		15	4	
Rye (acres per farm)			8	3	58 Fall, 13 Spring
Summer fallow (acres per farm)	158	50	101	194	126
New breaking (acres per farm)	1	5	5	3	(1928) (38)
Total capital per farm	$34,368	24,643	16,847	32,950	19,735
Land, value per farm	$22,810	15,562	10,112	22,383	10,719
Buildings, value per farm	$ 6,483	4,651	2,923	5,519	4,289
Equipment, value per farm	$ 2,970	2,492	2,001	3,102	3,024
Livestock, value per farm	$ 2,105	1,938	1,811	1,946	1,703
Land value per acre	$ 46.82	33.47	17.96	28.99	15.03
Land value per acre crop land	$ 50.91	48.04	24.25	37.55	19.85
Buildings, value per acre crop land	$ 14.47	14.35	7.01	9.26	7.94
Equipment, value per acre crop land	$ 6.63	7.69	4.80	5.20	5.60
Livestock, value per acre crop land	$ 4.70	5.98	4.34	3.27	3.15
Total capital per acre crop land	$ 76.71	76.06	40.40	55.28	36.54

Table 1 (*concluded*)

	Belbeck 1925–26		*Melfort* 1925–26		*Alameda* 1926–27		*Swift Current* 1927–28		*Swift Current* 1927–28	
Man equivalent		2.15		2.24		1.97		2.21		2.18
Acres of crop land per man		208		145		212		270		247
Livestock, (total animal units per farm)		21.8		25.7		25.5		23.9		26.0
Work horses per farm		13.0		11.8		10.8		15.8		15.0
Colts, animal units per farm	(33)	0.3	(44)	0.6	(50)	0.6	(40)	0.65		0.82
Cows per farm		4.4		6.1		6.7		3.9		5.9
Other cattle, animal units per farm		2.2		4.2		4.7		2.0		2.0
Brood sows, animal units per farm	(50)	0.16	(72)	0.38	(67)	0.34	(45)	0.19	(6)	0.17
Other hogs, animal units per farm		0.84		2.08		1.29		0.65		0.24
Sheep, animal units per farm	(3)	0.21	(3)	0.06	(8)	0.49	(2)	0.13	(1)	1.3
Poultry, animal units per farm		0.69		0.49		0.55		0.59		0.52
Acres of crop land per work horse		34.5		27.5		38.6		37.7		36.0
Acres of crop land per animal unit		20.6		12.6		16.4		24.9		20.8
Total cash receipts per farm		$7,739		6,752		5,978		9,099		9,348
Receipts from crops sold per farm		$7,123		6,002		4,890		8,226		8,024
Cash wheat sales per farm		$6,805		5,346		3,651		7,952		6,951
Farmers selling dairy products		69		74		79		35		7
Receipts per farm, dairy products	(119)	$74	(106)	91	(100)	181	(82)	31	(14)	358*
Farmers selling eggs		87		43		67		42		9
Receipts per farm, eggs	(119)	$48	(106)	17	(100)	37	(82)	28	(14)	44
Receipts per farm from stock sales		$265		378		501		282		320
Farmers custom threshing		29		27		32		29		6
Threshing receipts per farm	(119)	$196	(106)	201	(100)	276	(82)	421	(14)	528
Total operating expenses per farm		$2,805		2,614		2,541		3,694		4,050
Total operating expenses per acre of cropland		$6.26		8.07		6.09		6.20		7.50
Value labor and board (except operator)		$1,078		1,063		884		1,425		1,512
Value labor and board per acre of cropland		$2.41		3.28		2.12		2.39		2.80
Taxes paid per farm		$180		191		198		281		252
Taxes paid per acre of cropland		$0.40		0.59		0.47		0.47		0.47
Taxes per $1 land value (mills)		7.9		12.3		19.6		12.5		23.5

* Two farmers sold $4,300 worth of milk and cream, 5 others sold $715 worth, while 12 averaged $59 worth per farm.

plant food. The control of weeds has become one of the most serious problems of the farmer.

Late spring and early fall frosts occasionally make farmers' efforts fruitless. In 1928, an early frost in August caught the excellent wheat crop, and produced an average grade of No. 4, or No. 5 wheat, instead of a normal No. 2, or No. 3, and at the same time materially decreased the yield and complicated the marketing operations.

Rust has proved a serious menace to the wheat crop of the prairies. It cost the farmers millions of dollars in 1927.

Dry weather, with hot winds during the growing seasons of 1927 and 1929, reacted seriously on the crops of many sections of Saskatchewan and Alberta.

The recital of the adverse factors which have to be considered is not intended to portray pessimism. In many areas of the prairie provinces farmers have built up farm businesses from very little initial capital which compare favorably with results obtained from farming operations elsewhere.

In all parts of Saskatchewan the emphasis is decidedly on raising grain crops. Diversified farms are exceptional. Most farmers grow as much wheat as possible, as livestock enterprises do not appeal generally to the average farmer. Oats and barley rank next to wheat in importance. Where sandy soils have been found to drift with the high winds, fall rye has proved of considerable value in checking erosion. Mechanical power and larger machines and implements are becoming more common on prairie grain farms during recent years.

The capital values of these farms are significant. Where there is a high percentage of borrowed capital progress is extremely slow. The prices of lands in Saskatchewan did not advance as much during the war as in some nearby states, but in many sections of the province land prices should be considered out of line with their productive capacities. Settlements on lands which are useless for grain production have caused much distress, and government aid has been necessary to help people move away from some of the driest sandy areas of the southwest.

Land values, and building values vary greatly as indicated by the average estimates for each study. Changes in farm practice may render buildings useless as well as machinery, but in general the kind and condition of buildings reflect the success of agriculture on the prairies.

The greatest uniformity of investment in each area, appears in the livestock estimates. Melfort and Alameda might be considered naturally suited to livestock farming, but this is not reflected in the number of animals present. In most cases, the animals kept are practically limited to work horses, and the domestic animals required for farm needs.

There were wide ranges in the number of men available for farm work on comparatively similar farms, but group averages for the different areas show only small differences. Labor was probably used more efficiently on the rather poorer area of Alameda than in the more prosperous areas of Belbeck and Melfort.

The burden of taxation in developing new communities and providing ordinary necessities is comparatively heavy. When this is related to land values, assumed to be associated with their earning capacities, the heaviest tax burden is seen to fall on the poorest land where the community advantages are severely limited.

From these first studies the advantages of a farm decidedly larger than the average was apparent for Saskatchewan conditions. Yields somewhat better than the average decreased costs per unit and increased profits. The farms using men, horses, equipment, and land most efficiently, generally showed the lowest production costs, and the best financial returns.

One year's results provide only the beginning of serious study and alone may prove misleading, as results vary greatly from year to year. In the Alameda district, where farm lands are valued at about $18.00 per acre, the average labor income on 100 farms for the 1926-1927 crop year was $2,445. This was probably the best year these farmers had experienced for a decade. On the basis of yields and grades of the crop district, and average prices received, the index of the proceeds of sales per acre from 1917 to 1927 was 142, 107, 117, 76, 40, 114, 60, 98, 113, 154, 81 (1917-1927 = 100).[2]

Saskatchewan farmers suffer from the extreme variations in conditions. In the Saskatoon crop district the approximate number of acres of wheat required to pay taxes on a 320 acre farm varied from 3.37 in 1917 to 18.95 in 1924, and other farm costs varied in much the same way.[3]

[2] Based on reports of the Secretary of State, Department of Agriculture, Regina, Saskatchewan.

[3] Based on unpublished data collected by the Department of Farm Management, University of Saskatchewan.

At this time it would not be generally advantageous to put anything in the place of wheat growing, but under many conditions complementary enterprises would be profitable. The farmer should neglect no possible source of profit, but should avoid work which makes no contribution to the general and permanent success of the farm.

Farm management research in Saskatchewan is in its infancy and the field is large. Through the provision of the Agricultural Research Foundation a study of dairying on Saskatchewan farms has been made this year (1929), under the able direction of Dr. E. G. Misner of the Department of Agricultural Economics and Farm Management at Cornell University. This study was intended to include the marketing of Saskatchewan dairy products.

Many agencies are at work to improve the agriculture of the province and to benefit the farmers. Cooperative ventures have been characteristic of the province, and of the prairies in general, the most oustanding being the provincial Cooperative Wheat Producers, commonly known as the Pool. Coarse grains are marketed cooperatively through coarse grain pools and practically all agricultural products are provided with facilities for cooperative marketing.

DISCUSSION OF PROFESSOR ALLEN'S PAPER

Sir Thomas Middleton—Is the total capital of a farm ascertained from outlay or valuation?

Professor Allen—Valuation.

Dr. King—Is the land deteriorating in fertility?

Professor Allen—We are experimenting and find that it is not. We are attempting to get farmers interested to see what the results will be, but in most cases decline in yield is not a serious factor. Another danger, however, is encroachment of weeds.

Dr. King—Would the difference between crop land and total farm area shown in table 1 represent an attempt to grow grass?

Professor Allen—It would not represent any serious attempt. Only a sufficient number of cows are kept for farm needs. Cattle were more popular a few years ago than they are now. Sheep are out of the question. The average is only a little more than one sheep per farm.

Dr. King—What is the limiting factor with sheep?

Professor Allen—The limiting factor with sheep is the farmer as much as anything else. Farmers are getting nearly all of their receipts from the sale of grain crops. Other sources of receipts of some importance are poultry and custom threshing.