DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

REPORT OF THE CHIEF SUPERVISOR

J. C. MOYNAN, B.S A.

ON

THE ILLUSTRATION STATIONS

IN

BRITISH COLUMBIA, ALBERTA, SASKATCHEWAN and MANITOBA

FOR THE YEAR 1930

A discussion on potato growing at the Illustration Station Field Day at Duncan, Vancouver Island, B.C.

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ILLUSTRATION STATIONS

IN

BRITISH COLUMBIA, ALBERTA, SASKATCHEWAN, AND MANITOBA

During the past season two hundred and seven Illustration Stations have been in operation. Twelve of these stations are located in Prince Edward Island, fifteen in Nova Scotia, eighteen in New Brunswick, sixty-four in Quebec, nineteen in Ontario, fourteen in Manitoba, thirty-one in Saskatchewan, nineteen in Alberta and fifteen in British Columbia. The plan of procedure and type of work undertaken, of necessity, has varied considerably in order to direct attention in a demonstrational way to problems existing in these agricultural districts. The yields and cost of growing the different crops on each station, as well as their average over a period of years are summarized for publication and appear in two reports, one dealing with the work in the East, where mixed farming is generally carried on and the other with that in the western provinces.

For the collection of data and the recording of the results enumerated in this report, the superintendents of the Experimental Farms and the supervisors of the Illustration Stations as named below are responsible:—

Superintendents	*Supervisors*
W. H. Hicks, Agassiz, B.C.	A. E. Richards, Agassiz, B.C.
W. H. Fairfield, Lethbridge, Alta.	R. E. Everest, Lethbridge, Alta.
J. G. Taggart, Swift Current, Sask.	E. C. Sackville, Swift Current, Sask.
D. Matthews, Scott, Sask.	N. F. Bell, Scott, Sask.
M. J. Tinline, Brandon, Man.	D. A. Brown, Brandon, Man.
W. D. Albright, Beaverlodge, Alta.	

MULTIPLICATION OF VARIETIES AND SALE OF SEED GRAIN

Due to the wide range of seasonal and soil conditions existing in the districts where Illustration Stations are located, naturally there is a corresponding variation in the crop sequence, class and varieties which thrive best in each area. Based on the results of comparative trials, the most productive and desirable varieties of grain, grasses and clovers are increased and multiplied on the stations for sale as seed within the district. During the past season, these have included Grimm and Ontario variegated alfalfa seed, common red, alsike and sweet clover seed, timothy and western rye grass seed, Marquis, Reward, Garnet, Crail's Fife, Mindum and Huron wheat, Victory, Banner, Gopher and Alaska oats, Hennchen, Trebi, O.A.C. No. 21 and Charlottetown No. 80 Barley, as well as certified Green Mountain, Irish Cobbler, Netted Gem and Early St. George potatoes. The sales of seed from such varieties, made by the Illustration Station operators during the past year amounted to 31,182 bushels of seed grain, 13,897 bushels of seed potatoes, 16,001 pounds of grass and clover seed.

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PHOSPHATIC FERTILIZERS UNDER GRAIN FARMING PRACTICES

Triple superphosphate and ammonium phosphate fertilizer demonstrations on wheat and oats, under a system of grain farming, were carried out on twenty-six Illustration Stations in Alberta, Saskatchewan and Manitoba. These fertilizers were drilled in with a combined grain and fertilizer drill at rates as closely approximating fifty and one hundred pounds as was possible when using a machine of this kind. A check or unfertilized plot was provided for in each test from which to calculate the effect of each fertilizer on crop yields. In addition at Chedderville in the Jack Pine section, east of Rocky Mountain House, a comprehensive series of fertilizer demonstrations were carried out with quite striking and favourable results. On the four stations in Southern Alberta, where fifty pounds of triple phosphate were applied, increased yields were obtained ranging from 1.32 bushels to 13.03 bushels per acre. At Kipp the only increase in yield occurred where ammonium phosphate was applied at one hundred pounds per acre, the increase being 1·79 bushels.

In the Northern Alberta and Northern Saskatchewan districts of supervision, similar demonstrations carried on at five stations gave increased yields of wheat ranging from 4·5 bushels to 18 bushels per acre. At Kindersley, where sixty-three pounds of superphosphate were applied, quite striking results were obtained. At Guernsey on the plot where no fertilizer was applied, the wheat crop was completely destroyed by soil drifting; where eighty pounds of triple superphosphate were applied, the wheat came on rapidly, covering the growth well before soil drifting started, and yielded 36 bushels per acre. On the wooded soils at Meanook, no appreciable difference was obtained from the application of fertilizers.

On the stations in the southern portion of Saskatchewan, eleven fertilizer demonstrations were carried out. At Weyburn, the crop was hailed and at Herbert soil drifting occurred to the extent that comparative yields were impossible. However, on the nine stations where yields were obtainable, five show an increased yield ranging from ½ to 7 bushels per acre.

The six stations in Manitoba all show an increase in yield due to the use of fertilizer, ranging from 2.4 to 5.8 bushels per acre on wheat and from 6.4 to 17 bushels per acre on oats. Dry weather prevalent in many of these districts seriously affected yields, both on fertilized and unfertilized crops. From field observations, it was quite evident, however, that the fertilized crop made a stronger and more uniform growth, tillering was increased, weed growth was depressed and time of maturity advanced.

MILK RECORDS AND LIVE STOCK IMPROVEMENT

Added interest is being taken by the operators of Illustration Stations in the keeping of milk records and systematic improvement of their herds, as the results of their efforts from such practices become increasingly apparent. In this connection, reference may be made to accomplishments along this line in the Western Quebec and Eastern Ontario district of supervision. In 1928, the average milk production from the eighteen Illustration Station herds in that area was 6,442 pounds of milk. This year from these same stations and with the addition of one newly established, 255 milch cows were kept, of which number 181 had completed their lactation period at the time this report was compiled, the individual average production being 7,073 pounds or an annual increase of 631 pounds of milk per cow, over that of the former period. The average production included for the new station was 3,848 pounds. A survey of the individual production from each cow in these herds strikingly indicated that there are some very excellent producers and still some which can profitably be discarded as soon as they can be replaced by promising young heifers. The

lowest individual production was 2,445 pounds. In the older and more improved herds, where careful breeding has been carried on for a number of years and where milk records have been kept, considerable demand is developing for breeding stock from adjoining farmers within the district. Each year, also finds additional operators with their herds in the accredited herd lists. During the past year, the operators sold 288 head of cattle, 330 hogs and 104 sheep for breeding purposes.

BREAKING TEST ON THE ILLUSTRATION STATION, FORT ST. JOHN, PEACE RIVER DISTRICT, B.C.

Twenty acres of new land were utilized for the purpose of comparing "horse versus tractor" on brush or semi-brush land. This land was fairly open, park like country, dotted with clumps of poplar and heavy willow. The piece chosen was one-half mile long, divided into two areas of ten acres each.

The machinery used was a 15-20 caterpillar tractor with 22-inch brush breaker and four heavy horses on a 16-inch brush breaker.

The undermentioned costs are based upon prevailing prices in the district, for tractor $6 and for horse work $5 per acre, for labour grubbing $3 per day, for picking brush and all other work $2.50 per day.

Cost of Breaking with Horse and with Tractor

Method	Grubbing before ploughing	Digging roots and picking after ploughing	Picking and burning sticks before ploughing	Picking and hauling rocks after ploughing	Time required to plough	Actual cost per acre
	days	days	days	days	hours	$
Tractor	7·25	3·75	12·75	2·75	22·50	13 27
Horses	11·00	5·00	15·75	3·25	71·00	15 92

It was found that with the horse drawn implement, owing to less beam clearance it was impossible to turn under trash and small sticks that offer no problem to the higher beam of the tractor breaker. Again with green roots, the restricted power and resilience of the horse outfit cannot smash, or heave out, material that is cleanly cut and turned over by the more rigid and powerful tractor outfit. Further, the extra width and weight of the tractor furrow, aided perhaps by the steadier motion, turns the furrow with greater impact into the previously opened furrow trench. New growth of grass and native weeds, became perceptible on the horse ploughed land some few days before it was noticeable after the tractor.

The operator in his concluding remarks states that "although predisposed to horses, is compelled to concede superiority to the tractor for the work of breaking up such brush land, in preparation for growing cultural crops."

GARDEN AND HOME IMPROVEMENT

In order to build up the whole farm on which Illustration Stations are operating, into attractive and efficient units, special attention has been given to the improvement of farm buildings, the home surroundings, the vegetable garden and the production of small fruits for household use and local sale. From small beginnings of 100 strawberry plants and raspberry canes, fruit plantations have been developed by individual operators to the extent that their annual sales now exceed $200 per annum. All of this fruit is sold within the district and in

some cases at local summer resorts. The past season has also been marked as one in which a great deal of progress has been made in the way of improvement and remodelling farm buildings. Forty-six operators painted or white-washed their farm home, barns or outbuildings. Several did it for the first time. others also put down permanent lawns and made general improvement to their surroundings by planting trees, shrubs and establishing perennial borders.

COST OF GROWING WHEAT ON THE ILLUSTRATION STATIONS

For purposes of supervision, the three prairie provinces are divided into four districts and deal with operations on sixty-four Illustration Stations. Seasonal variations prevalent at each station have reflected directly on crop yields and production costs. Dry weather throughout the growing season, soil drifting, hail and wind storms, as well as rust in certain districts, resulted in very low yields on some stations. On three, grain crops were a failure. On others, more than average rainfall was obtained with favourable results to crop growth and yields. This latter condition was more prevalent in the northerly portions of these provinces. The yields and costs of growing crops, as well as their average over a period of years, is as herein recorded in the report on each station. A summary of the cost of growing wheat on fallow in 1930, by districts of supervision, shows a variation of from 43 cents to $1.46 per bushel. This cost, it will be noted, varies with the yield per acre and is as follows:—

	Yield per acre	Cost per bushel
Northern Saskatchewan and Northeastern Alberta	34·8	$0 43
Manitoba	19·7	0 77
Alberta	16·7	1 28
Northern Saskatchewan	13·4	1 46

REPORT OF THE ILLUSTRATION STATIONS IN BRITISH COLUMBIA

A. E. Richards, B.S.A., M.A., Supervisor

During the year fourteen Illustration Stations were supervised from the Experimental Farm at Agassiz. Five stations are located in Central British Columbia along the line of the Canadian National Railway serving the Upper Fraser, Nechako, and Bulkley valleys. Four are located on Vancouver Island and five in the southern interior of the province.

THE SEASON

The eastern section of Central British Columbia experienced another good season with rain well distributed throughout the growing period. Dry conditions in the Nechako reduced yields of all crops while the Bulkley Valley experienced quite a serious drought. With the exception of a heavy frost in early May growing conditions were favourable on Vancouver Island. In the southern interior a cool backward spring stimulated growth of meadow and grain crops but retarded hot season crops. In general the season was favourable for crop growth throughout the province.

PRECIPITATION FOR 1930 AT THE ILLUSTRATION STATIONS IN BRITISH COLUMBIA

Month	Alberni	Armstrong	Courtenay	Duncan	Fernie	Grand Forks	Lumby	McBride	Prince George	Salmon Arm	Salmon Valley	Telkwa	Vanderhoof
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	3·42	1·50	3·96	1·85	1·34	1·28	1·25	1·41	0·43	0·72	0·20	0·35	Nil
February	9·79	1·80	6·80	8·56	5·68	0·83	2·09	5·72	0·81	1·62	1·42	0·27	1·25
March	1·96	0·96	1·43	2·11	2·44	0·90	0·51	1·35	0·13	0·87	0·35	0·15	0·50
April	6·64	0·53	4·08	3·06	1·92	1·57	0·85	1·79	0·65	0·93	0·23	0·76	0·75
May	2·38	1·26	1·61	1·88	5·19	2·06	0·99	2·16	1·36	1·03	0·97	0·96	0·19
June	1·98	0·51	1·65	0·92	2·46	1·45	1·76	2·89	2·52	1·55	1·46	0·90	2·11
July	0·36	0·13	1·05	0·05	2·05	0·75	0·60	1·48	1·56	0·07	0·65	0·51	1·04
August	1·11	0·37	0·88	0·18	0·40	0·32	0·39	0·95	0·50	0·71	0·20	0·15	0·51
September	3·98	0·44	1·49	1·09	1·61	0·71	0·63	2·98	3·17	0·59	2·02	2·70	1·47
October	7·69	2·08	3·84	3·85	3·35	1·97	1·88	2·13	1·83	1·99	1·68	1·82	1·74
November	4·37	1·62	3·75	1·47	3·01	0·48	0·72	0·77	1·14	1·48	1·12	0·50	0·92
December	6·58	0·70	5·97	1·71	2·00	0·41	0·55	0·32	1·10	0·55	1·49	0·98	1·35
	50·26	11·90	36·51	26·73	31·45	12·73	12·22	23·95	15·20	12·11	11·79	10·05	11·83

MAXIMUM AND MINIMUM TEMPERATURES AT ILLUSTRATION STATIONS IN BRITISH COLUMBIA, 1930
(In degrees Fahrenheit)

Month	Armstrong		Duncan		Fernie		Grand Forks		Lumby		McBride		Prince George		Telkwa	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
January	38	−21	48	4	41	−28	43	−27	45	−28	24	−32	38	−34	35	−26
February	55	− 4	55	22	54	− 9	56	− 6	60	− 5	50	−18	52	−16	45	− 9
March	65	5	71	20	60	− 8	74	7	71	0	64	−10	64	− 2	59	− 5
April	88	24	71	29	70	24	78	27	82	26	73	25	72	20	63	17
May	91	28	78	29	73	29	83	31	92	28	75	20	78	21	70	21
June	90	40	85	37	84	34	87	37	84	33	78	28	83	34	77	30
July	102	37	90	39	88	34	98	45	100	30	88	28	90	31	87	30
August	97	40	88	44	91	33	100	43	97	29	87	26	90	32	87	31
September	90	25	85	32	81	28	91	26	89	18	76	15	80	14	86	22
October	82	24	70	26	70	17	80	22	74	17	55	15	71	8	64	8
November	50	13	63	22	58	4	54	13	58	8	50	4	56	− 7	58	− 2
December	41	12	55	20	38	− 2	39	3	39	0	46	24	41	12	47	20
Range	102	−21	90	4	91	−28	100	−27	100	−28	88	−32	90	−34	87	−26

OBJECTIVES AND PROGRESS

Demonstration and encouragement in the growing of alfalfa and clover has been a main objective of the Illustration Stations in Central British Columbia since work was undertaken in 1922. On Vancouver Island commercial fertilizer work forms a main project on the stations. At Grand Forks, under irrigation, the duty of water and its economic use are studied and cost records are kept. At Fernie, a comparatively new agricultural area, new crops are introduced and tested. Other parts of the province where Illustration Stations are located have problems peculiar to the district and to these problems the stations are giving their attention. On all stations better seed, better live stock, and improvement in home surroundings are objectives towards which progress is being steadily made.

CO-OPERATION AND EXTENSION

Assistance is given to the University of British Columbia in conducting an economic survey in districts where the Illustration Stations are located and this information is used to our mutual benefit.

A seven-year program of extension work with farmers in districts served by the Illustration Stations was concluded this year. Fifty-nine one-acre plots of alfalfa were established under the direction of the supervisor in Central British Columbia.

Co-operation and assistance from the Provincial Department of Agriculture extended the usefulness and effectiveness of the work. Special mention should be made of the assistance provided by the Animal Industry Branch through their pure bred sire policy.

The Dominion Seed Branch provided inspection service on each of the Illustration Stations and are assisting in raising the standard of the seed produced.

SEED AND LIVE STOCK SALES

The Illustration Station renders an important service to the community through the distribution of better seed and better live stock. During the past year, British Columbia operators sold as seed grain 830 bushels of wheat, 1,402 bushels of oats, and 40 bushels of barley. In addition they sold 8·53 tons of potatoes, 20 pounds of mangel, and 1,010 pounds of alfalfa seed. Eggs for hatching totalled 108 settings. Poultry sales for breeding purposes amounted to 82 hens, 71 pullets, 27 cockerels, and 10 turkeys. Live stock sold for breeding purposes included 18 head of cattle, 39 of swine, and 7 of sheep.

LIVE STOCK IMPROVEMENT

Illustration work in live stock improvement goes hand in hand with forage crop improvement. During the past year special attention has been given to this branch of the work with the result that several valuable additions have been made to the operators' herds and flocks. Of the fourteen operators, five have purchased pure-bred sires from some of the best herds in the province. Two imported heifers and two raised in Canada have been added to their farm live stock. Four pure-bred sows, four boars, and a number of breeding pens of high producing poultry have been purchased by the operators from Experimental Farm stock. This follows out the policy of live stock improvement through the Experimental Farms system. Better live stock is supplied to the operators which in turn reacts to the benefit of the district served by the Illustration Station.

NEW STATIONS

Work was undertaken this year on new stations located at Lumby in the North Okanagan Valley and at Grand Forks in the Boundary District. At Telkwa a change was made to a new location on the main highway midway between Telkwa and Smithers. In response to requests new districts were visited and the possibilities for work investigated.

FIELD DAYS AND MEETINGS IN BRITISH COLUMBIA

Field Days were held on the Illustration Stations in British Columbia at which the University of British Columbia, the Dominion Experimental Farm at Agassiz and Invermere, and the Provincial Department of Agriculture were represented. The Farmers' Institutes co-operated in making the meetings a success. At Duncan, June 19, sixty-three persons attended and at Alberni, June 20, twenty-four were present. At Fernie on August 20, sixty-five attended and at Salmon Arm, fifty-five visited the station with the representatives of the District Farmers' Institute. During the month of June members of the British Columbia Dairyman's Association toured Central British Columbia and visited the Illustration Stations with the Supervisor.

Co-operating with the Canadian National Railways and the Provincial Department of Agriculture the Supervisor represented the Experimental Farms on a tour by demonstration train through Central British Columbia. Fourteen points were visited with a total attendance of 2,901 persons.

As in the previous year the Supervisor had charge of the Dominion Experimental Farms Exhibit at the Canada Pacific Exhibition, Vancouver, August 8 to 16.

PRICES CHARGED IN CALCULATING COSTS

Rent and taxes, based on value of land at prevailing rate of interest plus taxes.

Horse and manual labour, cost of twine and threshing, based on prices in the district.

Use of machinery, $2.85 per acre.

Manure, $1.50 per ton.

COST OF SEED

(British Columbia)

Oats	Per bushel	$ 0 95
Wheat, fall	"	1 80
Wheat, spring	"	1 50
Barley	"	1 44
Rye, fall	"	1 96
Field peas	"	4 80
Spring vetch	"	4 20
Fall vetch	"	9 60
Field corn	Per pound	0 06
Sunflowers	"	0 11
Mangel	"	0 45
Potatoes, certified seed	Per ton	70 00
Potatoes, commercial seed	"	40 00
Timothy	Per pound	0 11
Meadow fescue	"	0 22
Italian rye grass	"	0 14
Tall oat grass	"	0 32
Clover, common red	"	0 24
Clover, alsike	"	0 24
Clover, white sweet	"	0 12
Alfalfa, Grimm	"	0 44

RETURN VALUES

(British Columbia)

Product		Vancouver Island	Southern Interior	Central British Columbia
		$	$	$
Clover and timothy hay	per ton	20 00	16 00	18 00
Alfalfa hay	"	24 00	15 00	20 00
White sweet clover hay	"	.....	.....	15 00
Peas and oats hay	"	.....	15 00	19 00
Oat and barley straw	"	8 00	6 00	6 80
Wheat straw	"	4 00	3 00	3 40
Sunflower ensilage	"	.....	5 00	6 00
Corn ensilage	"	7 00	6 00	.....
Oats and peas ensilage	"	8 00	7 00	8 00
Potatoes commercial	"	30 00	30 00	30 00
Mangels	"	4 00	.....	.....
Oats	per bushel	0 60	0 60	0 60
Wheat	"	1 10	1 10	1 10
Barley	"	.....	.....	0 90
Field peas	"	.....	.....	3 00
O.P.V. mixed	"	.....	.....	1 50

NOTE.—Vancouver Island stations include:—Alberni, Comox, Courtenay and Duncan. Southern Interior stations; Salmon Arm, Fernie, Armstrong, Lumby and Grand Forks. Central British Columbia stations; McBride, Prince George, Salmon Valley Telkwa and Vanderhoof.

The cost of farm manure is distributed over the crops in the rotation in the following proportions:—

Four-year rotation: first-year crop, 40 per cent; second-year crop, 30 per cent; third-year crop, 20 per cent; fourth-year crop, 10 per cent.

Five-year rotation: first-year crop, 40 per cent; second-year crop, 25 per cent; third-year crop, 20 per cent; fourth-year crop, 10 per cent, fifth-year crop, 5 per cent.

The residual influence of chemical fertilizers and lime is distributed as follows:—

Mixed fertilizers: first-year crop, 55 per cent of cost; second-year crop, 30 per cent of cost; third-year crop, 10 per cent of cost; fourth-year crop, 5 per cent of cost.

Nitrate of soda supplied alone: first-year crop, 80 per cent of cost; second-year crop, 20 per cent of cost.

Lime: cost is divided equally among each crop in the rotation.

ALBERNI, VANCOUVER ISLAND

OPERATOR, C. CHASE

A cool showery spring followed by hot weather favoured hay and grain crops. Roots and potatoes did not recover from a poor start and yields were below average.

Alfalfa is under test on this station and on neighbouring demonstration plots. On situations having good drainage it appears to be growing successfully. Alfalfa has proven its value to poultry raisers. Experimental work in British Columbia shows that alfalfa as a green feed and as a hay litter increases fertility, hatchability, and viability of the poultry flock. If the land is light or very weedy and the area under one acre it is advisable to sow the alfalfa in rows with a garden seeder. Rows should be two and one-half to three feet apart to permit thorough cultivation with the horse cultivator. From early spring to late fall the tender shoots of alfalfa can be clipped, thus providing a continuous supply of succulent green feed of the highest quality.

A summary of yields and costs on rotation fields is given in the following table:—

OPERATIONS AT ALBERNI, FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1930	Average	1930	Average	
					$	$	$
C	Potatoes, Burbank.....tons	5	6·25	7·97	15 45	16 99	85 97
C	Mangels, Sludstrup.....tons	1	13·95	.....	5 66	.....	.....
C	Kale, Thousand Headed.....tons	1	27·97	.....	2 36	.....	.....
B	Oats, Banner.....bush	5	51·00	58·00	0 64	0 70	5 08
A D	Hay, first year.....tons	3	2·90	2·37	12 19	12 15	10 81

Commercial fertilizers were applied March 4. Grain was sown March 31 and potatoes planted May 10. Hay was cut July 7 and grain harvested August 11.

Considerable work with commercial fertilizers is undertaken on this station. The following results were obtained on a first year meadow in which there had been a severe winter-killing of the clovers:—

COMMERCIAL FERTILIZER DEMONSTRATION ON FIRST-YEAR MEADOW AT ALBERNI

Plot	How fertilized per acre	Yield per acre (green)	Yield per acre (cured)
		tons	tons
1	Ammonium phosphate—100 pounds	9·30	3·04
2	Check—not fertilized	8·80	3·20
3	Sulphate of ammonia—115 pounds	11·80	4·20
4	Check—not fertilized	7·60	2·60
5	Triple phosphate—100 pounds	8·60	3·00

Special attention is given to improvement of potatoes by means of the potato seed plot. The best certified seed that can be obtained is planted in this plot of one-quarter acre. It is isolated from other potatoes and rogued thoroughly during the season in order to remove all trace of disease. This method is recommended for improvement of quality and yield in the field crop the following season.

A commercial fertilizer test with mangels and kale gave the following results:—

COMMERCIAL FERTILIZER DEMONSTRATION ON MANGELS AND KALE AT ALBERNI

Plot	How fertilized per acre	Yield per acre	
		Mangels	Kale
		tons	tons
1	Triple phosphate—200 pounds	13·95	27·97
2	Check—not fertilized	6·44	4·80
3	Ammonium phosphate—200 pounds	11·44	12·96

This station is demonstrating the value of manure, judicious use of commercial fertilizers, and better seed for improving the yield and quality of

potatoes. In estimating the profit and loss potatoes are valued at $30 per ton. Results are given in the following table:—

COMMERCIAL FERTILIZER DEMONSTRATION ON THE POTATO CROP AT ALBERNI

Plot	How fertilized per acre	Yield per acre	Increase over check plot	Cost of fertilizer per acre	Profit per acre above plot not fertilized
		tons	tons	$	$
1	Check—not fertilized	4·38	.....	.....	.....
2	4-10-10 mixture—1,000 pounds	7·51	3·13	16 77	77 13
3	4-10-10 mixture—500 pounds	6·25	1·87	8 38	41 72
4	Sulphate of potash—200 pounds	4·54	0·16	4 12	−3 96
5	Superphosphate—600 pounds	5·37	0·99	5 77	23 93
6	Nitrate of soda—75 pounds Sulphate of ammonia—225 pounds	4·94	0·56	4 51	12 29

ARMSTRONG, NORTH OKANAGAN

Operator, W. B. McKechnie

The spring was almost ideal for seeding and growth. Soil worked down nicely and moisture conditions were good. During June, July, and August the weather was very dry with a total precipitation of one inch. This drought combined with an outbreak of grasshoppers reduced second growth alfalfa and yields of all crops.

The main objective on this station is to demonstrate the value of alfalfa as a soil builder and forage crop. The rotation is laid down for ten years, with seven years in alfalfa. The alfalfa seed is drilled alone at 12 pounds per acre without a nurse crop. Weeds are clipped with a mower during the first year. After six successive cropping seasons the alfalfa sod is ploughed by tractor. Oats for grain or ensilage is the first crop to follow alfalfa. When the oat crop is harvested the land is ploughed and sown to fall wheat. This in turn is followed by corn which fits the land for seeding to alfalfa again. This cropping system recommends itself for dry farming areas.

A summary of yields and costs is given in the following table:—

OPERATIONS AT ARMSTRONG, TEN-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (−) loss per acre
			1930	Average	1930	Average	
					$	$	$
D	Oats and vetch.....bush.	3	50·0	44·3	0 47	0 47	24 06
C	Fall wheat, Jone's Fife.....bush.	6	40·0	32·8	0 68	0 72	19 75
B	Corn, Golden Glow.....tons	2	7·0	8·0	7 51	6 68	− 4 65
J	Alfalfa hay, first year stand.tons	4	1·25	1·60	18 68	15 33	2 52
I	Alfalfa hay, second year standtons	3	2·25	2·08	10 12	12 53	9 61
H	Alfalfa hay, third year stand tons	1	2·75	.....	8 64	.....	17 49
E, F, G	Alfalfa hay, old stand.....tons	6	1·75	1·87	12 72	10 58	10 19

All ploughing is completed in the fall of the year. Fall wheat was sown September 24 last season. Spring seeding commenced April 12. Alfalfa was cut June 15 and fall wheat harvested July 14.

The operator's herd of twelve Jerseys made up of six pure breds and six grade cows have a good record of performance. The average production per lactation period for each cow is 7,642 pounds whole milk and 381.9 pounds butterfat. The average test is 5.08 per cent butterfat.

Pure bred Yorkshire swine and a flock of pure bred White Wyandotte poultry round out a well balanced farm.

COMOX, VANCOUVER ISLAND

Operator, J. A. Carthew

The season opened favourably and all crops made satisfactory growth up to a very dry period starting at the middle of July.

Alfalfa is receiving attention on this Station. From its behaviour in mixtures and test plots this valuable forage crop appears to be well suited to many situations in this district. Weedy land is its greatest handicap and must be cleaned with a hoed crop before alfalfa will thrive. The deep, thorough cultivation which a good crop of potatoes receives is the right preparation for alfalfa. A good stand of alfalfa has been established on the station this year by sowing the seed on well worked potato land. The land was disked lightly in the spring but not ploughed. This practice provides a firmer seed bed and weed seeds are not brought to the surface to germinate and compete with the alfalfa seedlings.

A summary of yields and costs is given in the following table:

OPERATIONS AT COMOX, FOUR YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (−) loss per acre
			1930	Average	1930	Average	
					$	$	$
C	Potatoes.....tons	5	6·00	6·07	19 90	21 41	53 26
C	Corn.....tons	7	9·50	12·64	8 48	5 81	15 36
B	Oats, Victory.....bush.	5	73·50	73·70	0 49	0 53	19 15
A	Hay, first year.....tons	6	2·33	2·79	15 58	11 82	21 52
D	Hay, second year.....tons	5	3·00	3·60	11 06	10 26	23 34

Land was ploughed in February. Grain was sown April 21 and corn planted May 8. Hay was cut July 7 and grain harvested August 8.

Two grasses which deserve more attention on Vancouver Island are Italian Rye and Tall Oat grass. Both are nutritious grasses, which make early rapid growth and show a good recovery after the main hay crop is removed. Two pounds of Italian Rye and one pound of Tall Oat grass per acre in the mixture will greatly improve the yield of hay and provide excellent pasturage.

COURTENAY, VANCOUVER ISLAND

Operator, Halliday Bros.

A cool, backward spring delayed crop growth but on the whole the season was favourable.

The soil on this location is comparatively light and lacks humus. With a view to improving this condition fall rye and fall vetch were used as winter cover crops to turn under in the spring. The field intended for potatoes was ploughed shallow and seeded to rye at one and one-half bushels per acre on

September 19. During the winter, manure at the rate of sixteen tons per acre was spread on the field. In early March the fertilizer mixtures for the potatoes were broadcast over the vetch and rye. The cover crop gave two to two and one-half feet of heavy succulent growth to plough down for the potatoes in early May.

The practice of sowing fall cover crops on Vancouver Island soils is recommended for most locations. Not only does the cover crop improve the tilth and plant food in the soil but it prevents considerable leaching on fall ploughed land. By having a growing crop on the land manure and the commercial fertilizer elements which become available are readily utilized. This stimulates growth in the rye and vetch which in turn benefits the potato crop.

A summary of yields and costs is given in the following table:—

OPERATIONS AT COURTENAY, FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1930	Average	1930	Average	
					$	$	$
A	Potatoes, Burbank.....tons	7	8·44	10·70	13 36	13 73	182 79
A	Corn, Golden Glow.....tons	4	22·00	20·10	2 98	2 56	79 81
A	Corn, Sweet.....dozens of ears	1	600·00	.....	0 09	.....	58 52
A	O.P.V., ensilage.....tons	2	5·00	5·00	8 33	8 26	—1 31
B	Oats, Victory.....bush.	6	91·80	64·80	0 37	0 68	8 96
C	Hay, first year.....tons	6	2·33	2·44	15 74	11 48	15 55
D	Hay, second year.....tons	4	2·66	2·60	10 95	11 38	15 25

Barnyard manure was spread during the winter. Commercial fertilizers with the exception of nitrates were applied in March. Grain was sown May 10 and potatoes planted May 22. Hay was cut July 17 and grain harvested on August 18.

Fall vetch at five pounds per acre sown with the grass and clover mixture in the spring, considerably increased the tonnage and quality of the first year hay. Of the grasses in the mixture Italian Rye and Tall Oat are most evident. Improvement in clovers due to the application of crushed limestone at two tons per acre was noticeable in the second year hay.

Victory oats which yielded 91·8 bushels per acre of fine quality grain is the best crop of oats on the British Columbia stations this season. This grain was sown at the rate of 75 pounds to the acre as a nurse-crop for the clover and grasses. The mixture of clover and grasses consists of timothy at 3 pounds per acre; meadow fescue, 2 pounds; Italian rye, 2 pounds; Tall oat, 1 pound; common red clover, 6 pounds; alsike, 4 pounds; alfalfa, 2 pounds; and fall vetch, 5 pounds. This fall there is a strong even catch of clover and grasses over the whole field.

To harvest over 90 bushels of grain to the acre and on the same field to obtain a splendid stand of clover and grasses indicates the improvement which may be expected where a systematic crop rotation and good cultural methods are practised.

The growing of seed potatoes is one of the main projects on this station. Through selection and careful management followed consistently over a number of years the operators have built up an excellent strain of high yielding potatoes comparatively free from disease. The average yield over a seven-year period is 10·7 tons per acre at an average cost of $13.73 per ton.

A commercial fertilizer test is conducted on six one-quarter acre plots in duplicate. Barnyard manure was applied on all plots at the rate of sixteen tons per acre. In calculating the profit and loss potatoes are valued at $30 per ton.

COMMERCIAL FERTILIZER DEMONSTRATION ON THE POTATO CROP AT COURTENAY

Plot	How fertilized per acre	Yield per acre	Increase over check plot	Cost of fertilizer per acre	Profit per acre above plot not fertilized
		tons	tons	$	$
1	Nitrate of soda—50 pounds Sulphate of ammonia—150 pounds	3·72	0·16	6 15	−1 35
2	Superphosphate—600 pounds	4·48	0·92	4 95	22 65
3	Sulphate of potash—200 pounds	7·74	4·18	3 85	121 55
4	4–10–10—1,000 pounds	6·68	3·12	15 40	78 20
5	4–10–10—2,000 pounds	9·68	6·12	30 80	152 80
6	Check—not fertilized	3·56	.....	.....	.....
	Duplicate Plot				
1	Nitrate of soda—50 pounds Sulphate of ammonia—150 pounds	6·52	1·81	6 15	48 15
2	Superphosphate—600 pounds	8·61	3·90	4 95	112 05
3	Sulphate of potash—200 pounds	6·55	1·84	3 85	51 35
4	4–10–10—1,000 pounds	10·21	5·50	15 40	149 60
5	4–10–10—2,000 pounds	12·18	8·01	30 80	209 50
6	Check—not fertilized	4·71	.....	.....	.....

DUNCAN, VANCOUVER ISLAND

Operator, B. Young

Following a severe winter with considerable injury to fall seeded crops spring opened early with a good supply of moisture in the soil. Early sown crops and fruit made splendid advancement up to May 6, when growth was retarded by a sharp frost. Favourable growing conditions followed and for all main crops yields and quality were up to average.

A light soil underlaid with gravel on the station area makes this a soil building problem. A short rotation, frequent and regular application of manure, fall sown cover crops and clovers are included in the cropping program.

Fall rye at one and one-half bushels per acre and fall vetch at one-half bushel per acre were sown October 8. A good growth of succulent green material was turned under on April 10. This practice is recommended for light soils and where conditions permit an earlier seeding is preferable.

Kanota winter oats which produced a splendid crop last season were killed during the winter.

Alfalfa produces a good yield of fine quality hay on this farm and Mr. Young is extending his acreage each year. On light soil the seed is sown at the rate of 12 pounds per acre without a nurse crop of grain. On heavier soils with sufficient moisture a light nurse crop of barley is used. The Grimm variety of alfalfa appears most satisfactory.

In a favourable season the operator has harvested over 4 tons of cured alfalfa hay per acre in two cuttings. Good land promotes a strong growth of alfalfa which will smother weeds. This operator is using the best soil on his farm for alfalfa because he realizes it is the most valuable crop he grows.

The land for alfalfa should be cleaned with a hoed crop. The deep, thorough cultivation which a good crop of potatoes or mangels receives is the right preparation for the crop.

A summary of yields and eosts is given in the following table:—

OPERATIONS AT DUNCAN, THREE-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (−) loss per acre
			1930	Average	1930	Average	
					$	$	$
B	Potatoes, Early St. George. tons	3	5·25	5·37	22 98	22 20	95 89
A\	Barley, O.A.C. No. 21..... bush.	1	34·00	.....	1 12	.....	−7 53
C/							
D	Alfalfa hay, first year stand. tons	1	1·00	.....	39 70	.....	−15 70

Commereial fertilizer with the exception of the nitrates was applied Mareh 7. Potatoes, for the early market, were planted Mareh 25 and grain was sown April 10. Alfalfa was eut June 14. Barley was harvested July 19 and potatoes dug Oetober 1.

The operator is earrying out a definite poliey of seed and live stoek improvement. The seed that he puts in the ground is elean and his breeding stoek is carefully seleeted. The result is satisfaetion for himself and for those who buy his produets. This year the operator sold for seed 93 bushels of wheat, 576 bushels of oats, 25 bushels of barley and 20 pounds of mangel seed. He also disposed of 2 eoekerels, 14 head of swine and 7 sheep for breeding purposes.

With a view to herd improvement the Experimental Station at Summerland has sold the operator one of its most promising young Jersey sires. A Yorkshire boar and a breeding pen of high produeing Barred Roek poultry was purehased from the Agassiz Experimental Farm. In this way the Experimental Farms system makes contaet with outlying distriets to the benefit of all.

A eommereial fertilizer test with potatoes is eonduеted on this station. Barnyard manure was applied on all test plots at the rate of 15 tons per aere. In ealeulating the profit the potatoes whieh were grown for the early market are valued at $40.00 per ton.

COMMERCIAL FERTILIZER DEMONSTRATION ON THE POTATO CROP AT DUNCAN

Plot	How fertilized per acre	Yield per acre	Increase over check plot	Cost of fertilizer per acre	Profit per acre above plot not fertilized
		tons	tons	$	$
1	Nitrate of soda—75 pounds..... Sulphate of ammonia—225 pounds.....	6·45	2·70	9 47	98 53
2	Superphosphate—900 pounds.....	6·30	2·55	7 92	74 08
3	Sulphate of potash—300 pounds.....	3·90	0·15	5 94	0 06
4	4–10–10 mixture—750 pounds.....	5·25	1·50	11 96	48 04
5	4–10–10 mixture—1,500 pounds.....	6·30	2·55	23 92	78 08
6	Check—not fertilized.....	3·75	.....	.....	.....

FERNIE, EAST KOOTENAY

Operator, W. M. Dicken

The season opened earlier than usual but a eool spring held erops in eheek and the extremely dry weather in August brought yields below the average. A sudden thaw in Mareh with flooding and ieing on fields eaused serious damage to alfalfa fields. Winter-killing also was heavy among elovers.

Demonstration work with alfalfa has been so sueeessful that the standard four year rotation with elover will be extended with alfalfa as the base. This

change is brought about gradually and the land properly prepared before the alfalfa is sown. Herein lies one of the most important factors for success with alfalfa. Sod land is ploughed in the fall of the year. A grain crop or mixed crop of peas and oats for hay is grown on the land the succeeding year. Potatoes are planted the following year and the land receives thorough cultivation. If the soil is light and has been well and deeply worked ploughing is not necessary. In the spring a light disking and harrowing completes preparation for seeding to alfalfa.

A summary of yields and costs is given in the following table:—

OPERATIONS AT FERNIE, FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1930	Average	1930	Average	
					$	$	$
C	Potatoes.....tons.	3	2·53	4·05	33 54	34 35	29 06
A	Mixed grain, O.P.V.....bush.	3	33·70	44·90	0 66	0 57	33 65
D	Wheat, Garnet.....bush.	3	25·00	22·60	1 01	1 25	12 83
D	Oats, Banner.....bush.	2	50·00	50·00	0 36	0 29	22 67
B	Hay, first year.....tons	1	1·43	.....	9 90	.....	11 56
	Demonstration Block						
	Alfalfa hay, one year stand..tons	1	3·95	.....	7 24	.....	50 41

Work on the land started April 19. Grain was sown April 30. Alfalfa was cut July 14 and timothy meadow on July 28. Garnet wheat produced a fine quality of well matured, hard grain in 127 days. Last season this variety ripened in 110 days.

One acre of Ontario Variegated alfalfa which killed 60 per cent due to flooding and icing of the field was ploughed and put into potatoes. No commercial fertilizer or manure was applied. The plot which was very weedy before seeding down to alfalfa two years ago was quite free from weeds and did not require hand hoeing this season. The acre yielded 7 tons of good quality of potatoes compared with an acre yield of 2·53 tons on the fertilized plot. This is a striking demonstration of suppression and control of weeds by alfalfa and its soil building properties.

The operator this year purchased a pure bred Yorkshire sow which gave him a litter of ten pigs, a pure bred Ayrshire heifer and twenty-five pure bred Barred Rock hens from high-producing stock for breeding purposes.

A number of tests are conducted on this station to demonstrate the use and value of commercial fertilizers. An old hay meadow, which received a top-dressing of fertilizers on April 23, responded to the various treatments as follows:

COMMERCIAL FERTILIZER ON PASTURE LAND AT FERNIE

Plot	How fertilized per acre	Yield per acre	
		1929	1930
		tons	tons
1	Sulphate of ammonia—100 pounds.....	2·00	1·50
2	Ammonium phosphate—150 pounds.....	1·70	1·40
3	Triple phosphate—150 pounds.....	1·26	0·90
4	Check—not fertilized.....	1·06	0·66

Potatoes following alfalfa on the Illustration Station at Fernie, B.C., yielded 7 tons per acre on this field compared with 2·53 tons on an adjacent field when potatoes followed a grain crop.

Apparently a backward spring followed by extremely dry weather in August reduced the yield of the potato crop. Barnyard manure was applied to the crop at the rate of 16 tons per acre. In calculating profit and loss in the following table, potatoes are valued at $30 per ton.

COMMERCIAL FERTILIZER DEMONSTRATION ON THE POTATO CROP AT FERNIE

Plot	How fertilized per acre	Yield per acre	Increase over check plot	Cost of fertilizer per acre	Profit per acre above plot not fertilized
		tons	tons	$	$
1	Nitrate of soda—50 pounds Sulphate of ammonia—150 pounds	2·79	0·93	7 68	20 22
2	Triple phosphate—229 pounds	2·35	0·49	3 77	10 93
3	Superphosphate—600 pounds	2·30	0·44	8 08	5 12
4	Sulphate of potash—200 pounds	2·62	0·76	4 89	17 91
5	4–10–10 mixture—500 pounds	2·53	0·67	10 31	9 79
6	4–10–10 mixture—1,000 pounds	2·85	0·99	20 62	9 08
7	Check—not fertilized	1·86	.....	.....	.....

GRAND FORKS, KETTLE VALLEY

Operator, J. T. R. Lawrence

The block of land selected for illustration work is typical of a large area in this district. It has been cropped for years under a continuous grain growing system with the result that yields have been reduced and the soil impoverished.

Work of a preparatory nature was undertaken on this location last year. The land was levelled and fluming installed by the operator. Detailed records of capital and labour costs of these operations have been kept. A record of cost

and income from crops grown on this land will also be kept over a period of years. From these data the economic value of placing this land and similar land in the district under irrigation can be intelligently considered.

Before a permanent crop is established on irrigated land grading and ditching contours should be completed. For this reason the whole area was sown to grain and potatoes this season following a preliminary grading of the land. When the water was applied in June the high points were "spotted" and corrections in the levels made after the crop was harvested.

No barnyard manure and no commercial fertilizer were used on the crops this year.

A summary of yields and costs of the first crop under irrigation on this land is given in the following table:—

OPERATIONS AT GRAND FORKS

Crop	Yield per acre 1930	Cost 1930	Profit or (−) loss per acre
		$	$
Potatoes, Netted Gem	4·00 tons	19 13 per ton	43 75
Barley, O.A.C. No. 21	31·20 bush.	0 65 per bush.	7 85
Oats, Victory	41·60 bush.	0 56 per bush.	1 49
Wheat, Marquis	11·30 bush.	2 24 per bush.	−9 93
Oat hay	1·63 tons	15 65 per ton	−4 31

Twelve acres are now ready to be sown to the permanent alfalfa crop next spring. Six acres will be sown without a nurse crop and six acres with a light nurse crop of oats. The Grimm variety of alfalfa will be used, sown at the rate of 12 pounds of seed per acre. In time, when completely established, the rotation will consist of alfalfa, grain, and potatoes, with the alfalfa standing for five

Land levelled and fluming installed for the farm irrigation system on the recently established Illustration Station at Grand Forks, B.C.

years. With such a foundation and by the judicious use of water, manure, and fertilizer one may expect over a period of years to substantially increase his net returns per acre.

The operator is a member of the Canadian Seed Growers' Association. Registered seed grain and certified seed potatoes will be produced on the station. With a prospective supply of alfalfa hay on hand the operator is planning to diversify and balance his farm operations by the addition of live stock.

ORCHARD DEMONSTRATION

The value of fall or hairy vetch as a cover crop is being demonstrated on Mr. Lawrence's fifteen acre McIntosh Red apple orchard. The vetch is seeded in July at the rate of 20 to 30 pounds of seed per acre. In July or early August of the following year and after seed has matured on the stand, the vetch cover crop is disked under. This procedure has the advantage of reducing the water requirements of the cover crop and there is usually sufficient seed in the soil to ensure another crop without further seeding. Following this practice from year to year, the stand is perpetuated, the covering of vetch safeguards against winter injury, and plant food is conserved and increased.

LUMBY, EAST OKANAGAN

Operator, H. C. Catt

This station was selected last year and work of a preparatory nature undertaken this season. Meteorological instruments consisting of a maximum and minimum thermometer and rain gauge were placed on the station. The records kept by the operator show a total of 12.22 inches of rain with 5.22 inches during the grain growing season. These are the first climatic records that have been taken in this district.

A ten year rotation with alfalfa will be established on this location. Soil is light, the growing season comparatively dry and weeds are prevalent. Such a condition requires careful preparation for alfalfa. The method adopted on this station is to thoroughly summer fallow six acres each year working the land fairly deep and keeping a black surface at all times. As alfalfa likes a firm seed bed, no ploughing is done in the spring. The land is harrowed and alfalfa seed drilled in at the rate of ten pounds per acre. No nurse crop of grain is used. If weeds appear on the field during the season they are clipped with a mower before going to seed.

Labour and machine costs on the summer-fallow amounted to $7.70 per acre this year. Eighteen acres of Victory oats yielded 19.6 bushels per acre at a cost of 53 cents per bushel. The old meadow which is typical of too large an area in this valley yielded only 0·62 ton per acre.

The operator is making a strong feature of pure bred live stock. His Percheron horses, Shorthorn cattle, Yorkshire swine, and Barred Rock poultry are from registered stock. This year he sold 725 eggs for hatching and 2 Shorthorn bull calves.

During the year Mr. Catt purchased a Shorthorn bull calf from the Experimental Farm at Indian Head, Saskatchewan. This is an outstanding animal following strongly the well known Browndale line of breeding and should be a great asset to the district served by the Illustration Station.

McBRIDE, CENTRAL BRITISH COLUMBIA

OPERATOR, J. F. OAKLEY

Weather conditions were favourable for crop growth with abundant moisture all season. Continuous showery weather and cool days during the growing period delayed maturity of grain but stimulated growth of hay and forage crops.

With the market for timothy hay at lumber camps impaired, farmers are turning their attention to the raising of live stock and to the growing of proper forage. The number of head of stock that can be carried will depend on the amount of winter feed that can be grown. Demonstration and records show that alfalfa is the most productive and most profitable forage to grow in this district. Soil and climatic conditions suit the crop and when the land is properly prepared it takes hold with little difficulty.

On the mountain slopes north and south of McBride there are immense expanses of choice grazing land which in time should be brought into productive use. If the resources of these mountain steppes and basins and valley river-bottoms are combined the McBride district should support a considerable number of beef cattle and sheep.

A summary of yields and costs is given in the following table:—

OPERATIONS AT McBRIDE, FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1930	Average	1930	Average	
					$	$	$
B	Mixed grain, O.P.V.....bush.	1	56·0	.....	0 25	.....	70 10
C	Oats, Victory.....bush.	8	68·0	59·5	0 12	0 32	27 68
D	Barley, O.A.C. No. 21.....bush.	2	35·0	31·0	0 25	0 34	22 72
A	Hay, first year.....tons	5	1·5	1·5	11 13	10 69	7 61

Grain was sown April 26. Hay was cut July 14 and grain harvesting commenced August 25.

Two to four pounds of alfalfa seed is included in all grass and clover mixtures on the Illustration Station. This improves the feeding value of the hay crop and inoculates the soil for later seedings of alfalfa. After the first hay is cut timothy and alsike clover remain stationary while alfalfa produces good fall pasture or a second cut of hay.

PRINCE GEORGE, CENTRAL BRITISH COLUMBIA

OPERATOR, J. BLACKBURN

While the season was generally dry throughout the Central Interior, Prince George district was favoured with abundant rainfall which was well distributed throughout the growing period. Crops made a high average yield and quality.

The first principles of good farming which include a systematic crop rotation, good seed and timely operations are put into practice on this Station.

There is nothing spectacular or new about these simple rules of good farming but figures and practical experience show that they are fundamental to increased yields and profits. Careful records of cost and income for all crops produced have been kept over a period of eight years. These are shown in the table below for oats and clover hay.

ANNUAL AND AVERAGE RETURNS ON OATS AND CLOVER HAY AT PRINCE GEORGE

Year	Rainfall		Banner oats				Clover hay			
	Total annual	Average	Yield per acre	Average yield	Cost per bush.	Average cost	Yield per acre	Average yield	Cost per ton	Average cost
	in.	in.	bush.	bush.	cts.	cts.	tons	tons	$	$
1923	17·50	.....	55·7	.....	23	.....	1·80	.....	7 61	.....
1924	16·17	16·83	39·0	47·3	26	24	0·60	1·20	15 86	11 73
1925	19·78	17·82	50·1	48·3	40	30	1·10	1·16	9 95	11 14
1926	19·22	18·17	64·2	52·2	14	26	1·20	1·17	14 28	11 93
1927	23·82	19·30	74·0	56·6	32	28	1·80	1·30	6 70	10 88
1928	14·63	18·52	82·0	60·5	27	27	1·87	1·40	10 12	10 75
1929	19·79	18·70	83·0	63·7	21	26	2·65	1·58	6 48	10 14
1930	15·20	18·20	84·0	66·2	22	26	2·67	1·72	6 60	9 70

These figures show a steady increasing yield of grain and clover hay coupled with a decreasing cost per unit. This means that soil fertility has been maintained and improved over this period of years. An interesting comparison can be made with the yield and cost of Banner oats on the Demonstration Block as shown in the table below. This crop yielding 43.3 bushels per acre was grown on new land. Such results lead us to observe that the raw soil of this timbered area comes to its optimum yielding power after several years of cultivation, when the principles of good farming are practised.

A summary of yields and costs is given in the following table:—

OPERATIONS AT PRINCE GEORGE, FIVE-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1930	Average	1930	Average	
					$	$	$
B	Sunflowers, ensilage.....tons	8	3·57	5·96	12 80	7 65	5 77
B	Oats and peas, ensilage.....tons	8	4·02	5·32	8 91	8 25	2 41
C	Oats, Banner.....bush.	8	84·00	66·20	0 22	0 26	34 60
D	Hay, first year.....tons	8	2·67	1·72	6 60	9 70	13 72
E	Hay, second year.....tons	7	2·00	1·67	8 09	7 94	14 67
A	Hay, third year.....tons	4	1·25	1·50	10 34	8 48	10 48
	Demonstration Block						
	Oats, Banner.....bush.	1	43·30	.....	0 41	.....	14 85

All land was fall ploughed. Seeding operations commenced May 6. Hay was cut July 23. Ensilage crops were harvested August 25 and oats were cut September 5.

Members of the British Columbia Dairyman's Association visited the Station June 7. They expressed themselves as greatly pleased with the appearance of crops which showed the dairying possibilities of the district.

This station is typical of conditions over a large area of the central interior of the province. It is illustrating in a practical way that all crops necessary to operate and maintain a general mixed farm can be successfully and profitably grown. Grain, hay and ensilage provide home grown concentrates, roughage and succulence. Such special crops as alsike and red clover seed provide a remunerative cash return.

Five acres of Grimm alfalfa were seeded on the station this year. Three acres sown with a nurse crop of grain resulted in only a fair stand with small plants. Two acres sown without a nurse crop shows a strong healthy appearance and has made a satisfactory stand.

During the year Mr. Blackburn purchased a Holstein bull calf from the Experimental Farm at Agassiz. This calf which is in direct line from the former World's Champion cow Agassiz Segis May Echo will undoubtedly leave a mark of improvement on the operator's herd to the benefit of himself and the district.

SALMON ARM, THOMPSON VALLEY

Operator, Geo. Paterson

The season was generally favourable and the yield of crops well up to average.

Alfalfa is making a splendid showing on this station and every year produces two heavy crops. Due to its superiority over other forages the rotation will be extended with alfalfa used as a base. A very satisfactory stand was obtained this year by drilling in alfalfa at twelve pounds of seed to the acre. A mixture of oats and peas was used for a cover crop and cut early for hay and ensilage. After cutting the ensilage crop the alfalfa developed and is going into the winter with a sturdy appearance.

This farm was purchased by the operator three years ago in a run down condition and badly infested with weeds. A systematic crop rotation, soiling crops, after harvest cultivation, summer ploughing, and chemical weed killers are bringing about a remarkable change.

A test with chemical weed killers on mustard in a growing crop resulted in 60 per cent kill with sulphuric acid and 80 per cent kill with copper sulphate. Weather conditions were not as favourable for the sulphuric acid application and may account in part for the poorer kill.

A summary of yields and costs is given in the following table:—

OPERATIONS AT SALMON ARM, FIVE-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1930	Average	1930	Average	
					$	$	$
A	Corn, Golden Glow.....tons	3	12·50	12·50	6 70	6 56	3 48
B	O.P. hay.....tons	3	4·20	3·58	11 03	10 53	15 91
C	Oats, Victory.....bush.	3	53·50	70·70	0 35	0 36	33 06
D	Hay, first year.....tons	2	4·78	5·01	5 80	5 31	53 57
E	Hay, second year.....tons	1	5·40	.....	5 34	.....	57 57

Peas and vetches were sown April 19, oats on April 24, alfalfa April 24, and corn May 13. First crop of hay was cut July 3. Second crop was harvested August 25, with a total average yield of nearly 5 tons per acre. Corn was harvested September 24.

Mr. Paterson is laying the foundation for a splendid pure-bred Ayrshire herd. This year he purchased two imported Ayrshire heifers and one Canadian bred heifer. He also brought in a bull calf from the Experimental Station at Windermere. Along with pure bred Yorkshire swine and pure bred Barred Rock poultry the operator is following out a policy of live stock improvement on his farm which in turn benefits the district served by the Illustration Station.

SALMON VALLEY, CENTRAL BRITISH COLUMBIA

Operator, J. S. Johnson

Spring was backward and cool followed by intermittent hot dry summer periods. Crop yields were fair but below average.

Alfalfa is well established on this station and will become the main hay crop in the rotation. It is the practice on the Illustration Stations to include

2 to 4 pounds of alfalfa seed to the acre in all grass and clover mixtures. This procedure improves the quality of the forage, indicates the adaptability of the alfalfa to local soil conditions, and by inoculating the soil makes it more receptive to later seedings of alfalfa.

Where alfalfa demonstrates its adaptability to a location it is sown alone (except in a short rotation) as grasses tend to crowd the alfalfa and may in time form a sod-bound condition. The rate of seeding will depend on what the land will support and the method of seeding. On good land 12 pounds of seed per acre is used if seed is drilled and 15 pounds if broadcast on the surface. On light sandy soil or dry slopes these rates are reduced to 8 and 12 pounds respectively.

Good stands of clover and grass were established this season. Alfalfa sown alone made a very fair catch, and it is especialy good on burned-over hard knolls which always failed to give a catch with clover and grasses.

A summary of yields and costs is given in the following table:—

OPERATIONS AT SALMON VALLEY, FIVE-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
			1920	Average	1930	Average	
					$	$	$
C	O.P.V., hay.....tons	3	1·50	1·42	16 08	18 87	−0·30
A	Oats, Victory.....bush.	3	45·00	42·60	0 23	0 44	20 71
E	Hay, first year.....tons	5	1·25	1·60	7·72	6·98	14 45
B	Hay, second year.....tons	4	1·33	1·65	7·39	6·13	16 57
D	Hay, third year.....tons	4	1·25	1·34	7 65	7 54	10 11

Ploughing was completed in the fall of the year. Grain was sown May 5. Hay was cut July 30 and grain harvested September 8.

A commercial fertilizer test was conducted on the mixed crop of oats, peas and vetch. The plot on which ammonium phosphate was applied at 150 pounds per acre yielded approximately 2 tons of hay per acre. The triple phosphate produced approximately one and one-half tons in comparison with one ton per acre grown on the check plot which received no fertilizer.

TELKWA, BULKLEY VALLEY

Operator, W. A. Sproule

This station, located on the main highway midway between Smithers and Telkwa was selected this season and work of a preparatory nature undertaken. New seedings of sweet clover and alfalfa were laid down which will be extended to a nine-year rotation with alfalfa as a base.

The Bulkley Valley experienced one of the driest seasons in its farming history. With little reserve moisture in the ground in the spring followed by a summer drought, all crops suffered. Generally the hay crop was a failure and the grain crop very light.

Under such conditions the biennial white sweet clover shows immense powers of resistance. This forage plant, which will be featured on this station, deserves more attention from dairy farmers in British Columbia. Sweet clover does not make a very desirable hay, but as a pasture plant, a soil improver and as a preparatory crop for alfalfa, it fills a very important place in any cropping system. Few farm pasture plants will support as many cows to the acre and of the legumes it is one of the most important soil builders leaving an equivalent of ten to twelve tons of manure in its residues.

Sweet clover is adapted to a wide range of soil and climate. On this station it is sown at the rate of 12 pounds per acre with a light nurse crop of grain.

VANDERHOOF, NECHAKO VALLEY

OPERATOR, D. TURCOTTE

Spring opened with very little reserve moisture in the soil. Winter-killing of alfalfa and other legumes was severe. The growing period as a whole was backward with a light rainfall. As a result yields are below average but surprisingly good considering the season.

A nine-year rotation with alfalfa is in progress on the station. Although results so far have not been all that are desired, alfalfa has demonstrated its superiority over other legumes and hay crops in yield, drought resistance, and hardiness. First year alfalfa hay has given a four-year average yield of 1·56 tons per acre in comparison with a yield of 0·43 ton of clover and timothy averaged over the same period of time. Second year alfalfa has averaged 1·33 tons per acre while clover and timothy returned only 0·75 ton per acre. Last season with well distributed rainfall alfalfa gave two cuttings with a yield of 2·35 tons per acre.

In a variety test under field conditions Grimm from Canadian grown seed has proven superior. Last winter when other varieties killed completely the Grimm variety came through with only slight injury.

Observations show that fall ploughing and a firm seed-bed are essential for a successful catch of alfalfa. Circulation of air through a loose seed-bed has a tendency to dry the surface soil and seedlings wither before they become established.

A summary of yields and costs is given in the following table:—

OPERATIONS AT VANDERHOOF

Crop	Number of years grown	Yield per acre		Cost per unit		Average profit or (—) loss per acre
		1930	Average	1930	Average	
				$	$	$
Wheat, Reward.....bush.	3	15·0	22·3	0 74	0 54	20 61
Wheat, Garnet.....bush.	4	17·5	24·5	0 41	0 59	23 17
Sweet clover, hay.....tons	4	1·5	1·33	7 26	9 43	7 34
Alfalfa, third year stand.....tons	2	1·5	1·12	6 89	13 11	9 32

Ploughing was completed in September. Grain was sown April 26 and harvested September 1.

Where alfalfa killed 60 to 70 per cent fields were harrowed and seeded to Garnet wheat. The wheat yielded 17·5 bushels per acre and returned a slight profit on operations. Many injured alfalfa plants recovered under this treatment and will make a fair stand which can be improved with fresh seed.

FORT ST. JOHN, PEACE RIVER DISTRICT, B.C.

OPERATOR, J. W. ABBOTT

The spring season was somewhat late in opening and work commenced on the land April 27 and was general by May 6. The precipitation for the growing season was ample, the month of June being a particularly wet month. The rainfall for May, June, July and August totalled 10·27 inches. One-half of this amount was received during the month of June. Growth was correspondingly heavy and yields good. For the first time in seven years wheat was touched by frost on August 29. At this date wheat was not quite ripe, hence, was slightly blemished. Harvesting of spring sown grains commenced in early September.

Taken on the whole the past season may be considered good for crop volume, but poor for quality.

GRAIN CROP RESULTS AT FORT ST. JOHN

Crop	Yield per acre 1930	Average yield (4 years)
	bush.	bush.
Spring wheat—		
Marquis	48·2	.....
Garnet	42·8	37·6
Reward	40·3	32·8
Winter wheat—		
Turkey Red	52·4	.....
Oats—		
Banner	72·2	52·3
Victory	68·0	.....
Barley—		
Eureka, hulless	28·0	.....
Peas—		
Chancellor	31·2	24·7 (3 years)

In time of maturing the spring wheats varied, Garnet ripening two days ahead of Reward and Reward in turn eight days in advance of Marquis. In appearance they stood, Garnet, good, very slightly frosted; Reward, good, slightly frost damaged; and Marquis fair, showing considerable frost damage.

A crop of 48·2 bushels of Marquis wheat per acre on the Illustration Station at Fort St. John, Peace River District.

Winter wheat was sown on fallow August 13, 1929, and when harvested August 25, 1930, was an excellent sample. The yield of fifty bushels per acre would have been exceeded but for loss at harvest as a result of lodging. After standing two weeks in the stook, it was found to have become a little bleached in appearance.

Field peas were harvested on September 15 and gave a yield of 31·2 bushels of excellent quality grain. From this field the exhibit was prepared that obtained for the operator second prize at the Chicago International Hay and Grain Show.

FORAGE CROP RESULTS AT FORT ST. JOHN

Crop	Yield per acre 1930
	tons
Brome grass	1·3
Western rye grass	1·1
Brome grass and alfalfa	1·4
Western rye grass and alfalfa	1·1

These fields were seeded in 1926; possibly length of time since sowing is impairing the yield of the grasses. The area was broken up and worked down in August.

INTERTILLED CROP RESULTS AT FORT ST. JOHN

Crop	Yield per acre 1930
	tons
Potatoes—	
Irish Cobbler	7·98
Gold Coin	7·10
Bliss Triumph	7·00
Early Rose	6·93
Carrots—	
Danish Champion	7·42
Swede Turnips—	
Purple Top	25·58
Bangholm	24·10
Ditmars	22·52

Potatoes, carrots and turnips produced tubers and roots of good quality. Rape, kale and sunflowers made satisfactory feed crop growth. The season was unfavourable for the maturing of corn, and alfalfa grown for seed suffered severely by the touch of frost recorded on August 29. The vegetable garden was as in previous years good, late varieties were retarded somewhat from maturing as a result of the cold wet season.

REPORT OF THE ILLUSTRATION STATIONS IN ALBERTA

R. E. Everest, B.S.A., Supervisor

In 1930 fourteen Illustration Stations were supervised from the Experimental Station, Lethbridge. Twelve are under dry land conditions and two are on irrigated land. A change of location was made at Milk River, the former operator having sold his farm in 1929, new fields were laid out this spring, a little farther south, upon land owned and worked by Clarence Dittbenner.

The fourteen stations in this district of supervision comprised six hundred and seventy-six acres in which were represented one hundred and fifty-five fields. Field areas ranged from permanent pastures of ten acres to half acre blocks in grass and clover tests.

THE SEASON

Following a winter of light snowfall, spring weather was somewhat tardy in arriving. Commencement of seeding dates ranged from April 8 at Orion to May 9 at Glenwoodville. In the south and west of the province, the grain got away to a good start and favourable stands were obtained. East and north conditions for early growth were not so good. High winds, lack of moisture and cut-worms soon made an inroad on crop prospects. Some recovery was made in certain localities as scattered rains were received, others not so favoured continued to suffer. In July, on either side of the Red Deer River, large areas were

PRECIPITATION AT ILLUSTRATION STATIONS IN ALBERTA

192	Bindloss	Cessford	Cheddarville	Foremost	Glenwoodville	High River	Jenner	Kipp	Milk River	Orion	Pincher Creek	Sunnynook	Whitla	Youngstown	Lethbridge
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
September....	0·37	Nil	2·35	0·59	1·67	0·89	0·28	1·30	1·20	0·37	2·36	0·12	0·50	0·68	2·05
October.....	0·05	Nil	0·88	1·64	1·86	0·80	0·03	1·97	1·32	0·80	1·60	Nil	0·67	Nil	2·20
November....	0·65	1·60	3·00	0·83	1·11	1·80	1·17	0·80	1·00	0·88	1·15	2·80	1·00	1·68	0·49
December....	0·70	2·20	1·60	0·80	2·08	1·20	1·03	1·80	2·27	1·60	3·55	0·27	1·44	0·80	1·91
Totals.....	1·77	3·80	7·83	3·86	6·72	4·69	2·51	5·87	5·79	3·65	8·66	3·19	3·61	3·16	6·65
1930															
January.....	0·10	0·16	0·40	.....	0·60	0·60	0·15	0·25	0·47	0·25	0·57	0·20	1·00	0·22	0·37
February.....	Nil	0·20	0·55	.....	0·55	Nil	0·20	0·30	0·34	Nil	0·57	0·20	0·50	0·43	0·20
March.....	Nil	0·20	1·35	0·40	1·15	2·05	0·12	0·60	1·11	Nil	2·52	0·15	1·00	0·25	0·77
April.....	1·65	1·08	2·62	1·62	1·26	4·13	1·95	1·76	1·21	1·97	1·67	1·12	1·87	1·67	1·53
May.....	0·85	1·00	2·50	1·89	1·19	1·92	1·45	1·20	1·56	1·40	1·37	0·49	1·84	0·72	1·54
June.....	2·09	1·77	2·48	1·49	1·35	4·34	1·93	0·68	1·41	1·75	1·93	2·04	1·66	2·97	1·42
July.....	0·59	2·21	2·46	0·97	2·33	1·53	1·12	2·84	1·29	0·65	2·89	1·96	1·83	1·03	1·87
August.....	1·31	0·02	2·31	0·86	0·24	0·64	2·56	0·56	0·34	0·32	Nil	Nil	0·98	1·39	0·57
September....	1·84	2·91	2·24	2·72	1·55	0·92	3·47	2·31	1·61	2·01	1·73	1·50	3·44	2·33	2·36
October.....	1·01	0·50	1·91	0·53	0·90	0·37	0·53	0·60	0·64	0·46	1·15	0·25	1·11	0·58	0·58
November....	0·10	0·35	0·80	0·52	1·80	0·80	0·42	0·70	1·59	Nil	1·26	0·15	0·60	0·20	0·92
December....	Nil	0·40	0·10	0·15	Nil	Nil	0·35	0·17	0·46	0·20	Nil	0·40	0·30	0·17	0·21
Totals.....	9·54	10·74	19·72	.....	12·92	17·30	14·25	11·97	12·02	9·01	15·66	8·44	16·13	11·96	12·34
Six Years—															
1925.....	13·18	.....	.....	.....	16·50	15·49	13·49	19·48	.....	14·45	22·15	.....	15·93	13·58	18·76
1926.....	18·26	.....	.....	.....	14·24	17·29	11·02	16·22	.....	8·97	20·46	.....	10·57	13·07	16·23
1927.....	19·84	.....	.....	.....	30·74	22·39	22·64	22·37	.....	22·33	33·60	.....	26·28	21·07	23·85
1928.....	9·19	.....	.....	.....	19·85	14·22	10·87	18·58	.....	11·85	20·94	.....	14·06	11·00	18·07
1929.....	6·25	.....	.....	.....	18·10	13·65	8·37	18·40	.....	12·38	20·05	.....	11·55	8·42	19·71
1930.....	9·54	.....	.....	.....	12·92	17·30	14·25	11·97	.....	9·01	15·66	.....	16·13	11·96	12·34
Average...	12·71	*	*	*	18·72	16·72	13·44	17·84	*	13·16	22·14	*	15·75	13·18	18·16

*Incomplete.

visited by hail storms that in places wrought total destruction of the ripening grain. Further south the July shortage of rainfall curtailed considerably the crop outlook. In the west portion of the province, as far north as Calgary, weather conditions continued ideal right through to harvest, when a heavy yield of good quality grain was obtained.

The autumn was frost free in the Lethbridge district up to October 15. The first killing frost was one of fifteen degrees, thus taking the majority of people by surprise with the result that field potatoes and garden crops suffered in many instances. During September over the foothill country and more particularly north of Calgary rains and falls of snow interrupted threshing. Later open weather permitted fall work to be completed in fair shape.

SWEET CLOVER REVIEW

Since 1921 sweet clover has been seeded regularly upon the Illustration Stations. The plan followed in the main has been to sow with wheat on fallow. If a full stand came through the following year, the field was taken for hay. If a partial stand was the result a seeding in of oats would be made to supplement the clover crop. Should the stand of sweet clover be very meager, the field is ploughed and sown to oats.

The table below summarizes the results obtained in the growing of sweet clover on the Alberta Illustration Stations over a period of years.

RESULTS WITH SWEET CLOVER ON THE ALBERTA ILLUSTRATION STATIONS

Place	Number years sown	Years failure	Years supplemented with oats	Years clover alone	Total yield	Average yield	Cost of seed per ton hay	Average yearly precipitation
					tons	tons	$	in.
Years.....	1924–1929							1925–1929
Bindloss.....	6	2	1	3	3·68	0·61	1 87	13·34
Years.....	1926–1929							1927–1929
Cessford.....	4	3	.....	1	1·00	0·25	4 18	15·42
Years.....	1921–1926							1923–1926
Delacour.....	6	2	1	3	4·05	0·67	1 75	20·45
Years.....	1921–1925							1923–1926
Foremost.....	4	3	1	.....	0·40	0·10	11 33	11·83
Years.....	1921–1928							1921–1927
Grassy Lake.....	7	3	1	3	5·60	0·80	1 64	13·90
Years.....	1921–1929							1923–1929
High River.....	9	4	2	3	8·10	0·90	1 20	17·21
Years.....	1927–1929							1927–1929
Jenner.....	3	1	1	1	1·62	0·54	1 96	13·96
Years.....	1921–1925							1923–1926
Milk River.....	4	1	.....	3	3·40	0·85	1 46	14·90
Years.....	1923–1929							1923–1929
Orion.....	7	3	3	1	2·97	0·42	2 59	13·22
Years.....	1921–1929							1921–1929
Pincher Creek.....	8	.....	.....	8	11·60	1·45	0 83	21·37
Years.....	1922–1929							1923–1929
Whitla.....	8	5	.....	3	3·47	0·43	2 62	15·60
Years.....	1922–1929							1923–1929
Youngstown.....	8	2	4	2	7·37	0·92	1 11	13·58

By the table above it may be seen that sweet clover does not give adequate returns in all districts. Where the average yearly precipitation does not exceed

fifteen inches, sweet clover is a somewhat hazardous crop to depend upon for feed. When prolonged summer drought conjointly with intense heat prevails the sweet clover seedlings become brown, shrivel up and die before their root systems become established.

At Youngstown, where out of eight years seeding there were two failures, four supplemented crops and two seasons of clover alone, the operator considers it a wise practice to carry over a stack of sweet clover from a good crop as a reserve of feed for a year of drought and forage failure.

In the districts of Pincher Creek, High River and Milk River, sweet clover is recognized as a possible hay and pasture crop.

This biennial clover has been before the farming public for the past ten years and by actual trial is finding the areas where it may be sown to advantage.

CROP SEASON 1930

In compiling this report the cost of production and profit or loss are based on the rates that are given below:—

COST CHARGES

Rent dry land stations	8 per cent of land value
Rent irrigated stations	$8 per acre
Use of machinery	$1.35 per acre
Horse labour (per horse)	8 cents per hour
Manual labour per hour	Rates prevailing in the district
Combining per acre	Rates prevailing in the district
Heading per acre	Rates prevailing in the district
Threshing per bushel	Rates prevailing in the district
Binder twine per pound	Rates prevailing in the district

COST OF SEED

Wheat, per bushel	$ 1 10
Oats, per bushel	0 68
Barley, per bushel	0 96
Corn, per pound	0 06
Sweet clover, per pound	0 12
Alfalfa, per pound	0 40
Western rye grass, per pound	0 13
Timothy, per pound	0 11

RETURN VALUES

Wheat, per bushel	$ 0 50
Oats, per bushel	0 25
Barley, per bushel	0 25
Hay, per ton	10 00
Oat sheaf feed, per ton	10 00
Corn fodder green, per ton	5 00

ALLOCATION COST OF SUMMER-FALLOWING

When computing the cost of growing the various crops, two-thirds of the cost of summer-fallowing is charged to the first crop and one-third to the second crop. The yields given for hay and fodder crops are estimated weights:—

GENERAL OUTLINE OF ROTATIONS IN USE

Three-year rotation—three fields.
- Summer-fallow.
- Wheat on fallow.
- Wheat on spring ploughing.

Three-year rotation—three fields.
- Summer-fallow.
- Wheat seeded with sweet clover.
- Sweet clover hay.

Four-year rotation—four fields.
Summer-fallow.
Oats seeded with western rye grass.
Western rye grass hay.
Western rye grass hay.

Two-year rotation—two fields.
Wheat on corn stubble.
Corn on wheat ground.

Two-year rotation—two fields.
Summer-fallow.
Wheat.

An additional field is devoted to alfalfa in rows or broadcast, as the precipitation for the district dictates.

An additional field is devoted to alfalfa in rows or broadcast, as the precipitation for the district dictates.

IRRIGATED STATIONS

Ten-year rotation—ten fields.
Alfalfa hay.
Alfalfa hay.
Alfalfa hay.
Alfalfa hay.
Alfalfa hay.
Alfalfa hay.
Wheat.
Rowed crop or wheat.
Oats.
Barley seeded with alfalfa.

On the irrigated stations, there is in addition to the above rotation a well fenced permanent pasture, which is laid out with a border system of irrigation. The mixture used in seeding this pasture totals 22 pounds per acre and is made up of Kentucky blue grass 6 pounds, English blue grass 6 pounds, western rye grass 4 pounds, alfalfa 4 pounds and 2 pounds of timothy seed.

BINDLOSS, ALBERTA

OPERATOR, JOHN BARNES

At the opening of spring, the soil was in a somewhat dry condition. Less than two inches of precipitation were received between August, 1929, and April, 1930. The operator prepared land in April, but held back from sowing until the second of May, following a rain that amounted to 1.52 inches. This late April rain was succeeded by a droughty May and by the tenth of June vegetation was beginning to show the want of moisture. Later June rains carried the wheat crop along fairly into July. This crop uncertainty was settled in an adverse way on July 26, when a hailstorm completely destroyed the ripening grain.

What is much regretted by Mr. Barnes, following the hail storm of July 26, is that the strong position is lost which he had gained by years of work in the production of registered Marquis wheat. During the spring, the operator sold from his flock of Barred Rock poultry, nineteen cockerels and six settings of eggs. Seed grain sales were of wheat, 300 bushels.

The station farm at Bindloss, throughout the season, was a model for neatness and good work.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS' YIELDS AND COST OF PRODUCTION AT BINDLOSS

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow	.....	.....	.....	5 19	5 33	.....	.....
Wheat, Marquis after fallow	Hailed out	20·87	No crop	8 09	12 27	−8 09	11 06
Wheat, Marquis after wheat	Hailed out	14·85	No crop	7 41	9 99	−7·41	6 69
Three-year Rotation—							
Summer-fallow	.....	.....	.....	5 27	5 15	.....	.....
Wheat, Marquis after falllow	Hailed out	22·37	No crop	7 54	12 06	−7 54	13 03
Hay, oats replacing clover	1·20	.....	7 66	9 19	.....	2 81	.....
Two-year Rotation—							
Wheat after corn	Hailed out	16·28	No crop	4 80	8 91	−4 80	9 09
Corn, N.W. Dent	2·00	4·17	3 81	7 63	8 49	2 38	7 10
Demonstration Test Field—							
Alfalfa	0·50	.....	8 90	4 45	.....	0 55	.....

CESSFORD

OPERATOR, G. E. GRIFFITH

Autumn moisture of 1929 at this point was fair, winter precipitation light with the spring and summer of 1930 droughty. Grain crops started the season favourably, but moisture was not available in sufficient amount to carry the crop through to a good yield.

Seeding commenced April 15. Wheat was sown at the rate of one and one-fifth bushels on fallow and one bushel per acre on second crop land. The wheat fields were harvested with the header on August 22.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF FOUR YEARS' YIELDS AND COST OF PRODUCTION AT CESSFORD

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow	.....	.....	.....	4 06	4 52	.....	.....
Wheat, Marquis after fallow	7·00	23·85	1 21	8 46	12 07	−4 97	12 84
Wheat, Marquis after wheat	5·00	14·07	1 60	8 01	9 49	−5 50	5 21
Three-year Rotation—							
Summer-fallow	.....	.....	.....	3 60	4 20	.....	.....
Wheat, Marquis after fallow	3·00	22·10	2 64	7 92	11 49	−6 42	12 14
Hay, oats replacing clover	0 80	.....	11 50	9 20	.....	−1 20	.....
Two-year Rotation—							
Wheat after corn	2·00	18·20	2 65	5 30	8 30	−4 30	11 37
Corn, N.W. Dent	2·00	.....	2 79	5 58	.....	4 42	.....

From the table above, it may be seen that grain crops were produced at a loss in 1930. To depict the influence of wheat selling price on profit per acre a comparison of 1929 and 1930 results are given for Cessford.

Selling price of wheat, 1929, per bushel	$ 1 25
Selling price of wheat, 1930, per bushel	0 50
1929 crop 9·60 bushels yield profit per acre	2 50
1930 crop 7·00 bushels yield loss per acre	4 97

The conclusion that suggests itself from the foregoing comparison is that areas of low average production of necessity lose settlement in a period of depressed selling prices for wheat.

The station at Cessford was started in 1926 and has been recorded for a period of four years, hence, an average for that time is all that can be given. It is obvious that a comparison of results cannot be fairly made with those older stations for which a six-year average record appears.

CHEDDERVILLE

Operator, Albert May

Work with commercial fertilizers was continued and extended at this point during 1930. The Chedderville farm area has a soil of sandy nature and a tree growth that is limited to Jack pine, which indicates low fertility.

Since work was started on this station in 1927 farmyard manure, lime, superphosphate, ammonium phosphate, sulphate of ammonia, sulphate of potash

A check plot of barley which did not receive an application of chemical fertilizer, Illustration Station, Chedderville, Alberta.

and nitrate of soda have been used singly or in combination. These treatments have been given on a field acre basis and have been applied to old land and new land, with barley, with oats, on growing alfalfa and with sweet clover seedings.

The results thus far observed give valuable leads towards the solution of this particular soil problem. At this time it is not considered that the work has gone far enough to be reported in detail.

Dairy cows, hogs and poultry are the main sources of revenue on this farm. In 1930 the owner for the first season since settling had sufficient in coarse grains and forage crops to carry his increasing amount of stock through the year.

Barley crop at Chedderville, which received an application of 500 pounds of chemical fertilizer. Although partially hailed, an increase of 14·4 bushels per acre was obtained.

During the growing season the field differences were so marked in the fertilizer trials, that numerous enquiries were made of the operator concerning the work.

At the close of the season, there was a noticeable trend of settlement and consequent home building westward towards this Rocky Mountain House District. Building material, fuel for homes and roughage for livestock are easily available in return for labour expended and with these provisions the actual cash requirements of living are reduced towards the minimum.

FOREMOST

OPERATOR, T. M. CALHOUN

This station where work was laid down in 1929 comes near to its proper field crop sequence in 1930. Seeding commenced April 19 and wheat was sown at the rate of one and one-fifth bushels per acre. Wheat harvest with the binder was started on August 4 and combining was done on August 19.

The Foremost district held promise of a good crop for the greater part of the season. Drought of late summer, however, worked against large yields.

RESULTS OF THE SEASON'S WORK AT FOREMOST

Rotation and crops	Yield per acre, bush. or tons	Cost per bush. or ton	Cost per acre	Profit or (—) loss per acre
		$	$	$
Summer-fallow			5 62	
Wheat, Marquis after fallow	19·60	0 57	11 13	—1 37
Three-year Rotation—				
Summer-fallow			5 62	
Wheat, Marquis after fallow	16·60	0 65	10 85	—2 49
Sweet clover and oat hay	Failure		9 45	—9 45
Two-year Rotation—				
Wheat after corn	12·00	0 56	6 76	—0 72
Corn, N.W. Dent	1·00	10 41	10 41	—5 41

HIGH RIVER

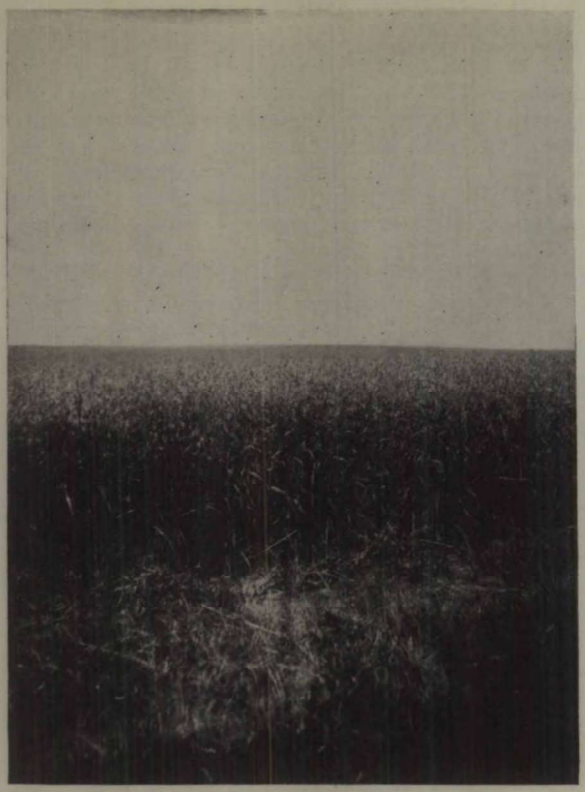
OPERATOR, B. F. KISER

Three amounts of precipitation may be set down that will give an index to the excellent crops harvested in this district. The autumn precipitation for September, October, November and December 1929 amounted to 4.96 inches, the April precipitation was 4.13 inches and the June rains totalled 4.34 inches.

Seeding was started upon this station on April 14. Wheat on fallow was sown at the rate of one and one-half bushels per acre and wheat, second crop, one and one-quarter bushels per acre. Wheat harvest commenced on August 14.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS' YIELDS AND COST OF PRODUCTION AT HIGH RIVER

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (—) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow				8 45	8 63		
Wheat, Marquis after fallow	45·00	37·00	0 44	19 59	20 41	2 70	17 30
Wheat, Marquis after wheat	36·00	30·78	0 39	14 08	17 34	3 96	14 19
Three-year Rotation—							
Summer-fallow				8 77	8 76		
Wheat, Garnet after fallow	55·00		0 37	20 15		7 15	
Oats, replacing clover	110·00		0 18	20 01		7 70	
Varieties of Wheat—							
Reward	45·00						
Marquis	50·00						
Garnet	55·00						



Banner oats on the Illustration Station at High River, Alberta, as a substitute crop where sweet clover failed, yielded 110 bushels per acre.

The operator at this station speaks favourably of Garnet wheat for his location. It ripens early and threshes out high in yield and quality of grain. The three varieties of wheat grown on this farm, Marquis, Garnet and Reward were all of high grade. Of the stations covered in this Alberta report High River leads in crop returns. For the past season, nature combined with good cultural practices of the farmers on the land made of High River one of the outstanding crop districts of the province.

JENNER

Operator, Nels Klein

Spring conditions at this point were favourable to the early life of grain crops. Seeding was started on April 18. Rainfall for May was light and by the middle of June drought was telling on the wheat fields. Wheat on fallow was sown at the rate of one and one-quarter bushels per acre and wheat, second crop, at the rate of one bushel per acre. Harvesting was carried out by the header method on August 7.

A commendable piece of work in farm improvement was performed by the operator during the past year. A hip roof barn 28 feet by 64 feet with stable for thirteen horses, fourteen head of cattle, water inside and spacious loft above,

has been erected. Construction costs were held very low, through purchase of old buildings, personal work and management of the owner in the building operations.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF FOUR YEARS' YIELDS AND COST OF PRODUCTION AT JENNER

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow	.....	.....	.....	4 77	5 32	.....	.....
Wheat, Marquis after fallow	5·00	21·40	1 71	8 55	12 16	−6 05	10 67
Wheat, Marquis after wheat	5·25	15·06	1 76	9 26	10 50	−6 61	5 55
Three-year Rotation—							
Summer-fallow	.....	.....	.....	4 31	5 22	.....	.....
Wheat, Marquis after fallow	2·00	20·10	4 00	8 01	11 92	−7 00	9 90
Hay, oats replacing clover	0·25	.....	33 83	8 47	.....	−5 97	.....
Demonstration Test Field—							
Wheat on corn ground	6·00	.....	0 91	5 44	.....	−2 46	.....
Corn, N.W. Dent after fallow	3·00	.....	3 74	11 22	.....	3 78	.....

MILK RIVER

Operator, C. A. Dittbenner

In the spring of 1930, this station was measured out and rotation work started. A table of yields and costs in order of the respective years is not given in this report for the reason that the sequence of crops in the rotation is not yet fully established.

ORION

Operator, George Wagar

Seeding started at this station on April 8. Spring moisture was favourable and wheat made a uniform germination. The months May, June and July together gave a precipitation amount of 3.80 inches, July being 0.65 of an inch. This failling off in summer rains resulted in a low crop yield at harvest time. Wheat was sown at the rate of one and one-quarter bushels on fallows and one bushel per acre on second crop land. Combining was done on August 21.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS' YIELDS AND COST OF PRODUCTION AT ORION

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow	.....	.....	.....	4 18	4 71	.....	.....
Wheat, Marquis after fallow	15·50	21·93	0 65	10 09	11 16	−2 32	11 48
Wheat, Marquis after wheat	10·40	14·30	0 74	7 66	9 62	−2 50	5 29
Three-year Rotation—							
Summer-fallow	.....	.....	.....	4 18	4 78	.....	.....
Wheat, Marquis after fallow	15·00	20·92	0 65	9 82	11 11	−2 25	10 57
Hay, oats replacing clover	00·80	.....	10 01	8 01	.....	−0 01	.....
Two-year Rotation—							
Wheat after corn	8·00	13·88	0 78	6 23	7 09	−2 24	7 45
Corn, N.W. Dent	1·00	3·00	6 16	6 16	9 31	−1 18	1 69

The combine entered largely into the harvesting threshing operations of the Orion district this season as in 1929. Some yields were so low that at the current price of wheat scarcely anything was left for the grower, after combine charges were paid. All crops upon the station fields were produced at a loss.

A new residence was planned for building during the autumn. In 1929 a commodious livestock and forage barn was constructed. These investments result from the conclusion that there is a way to farm in this area of limited rainfall so that over the years something more than a good living can be obtained.

In the early part of the season the station fields were a delight to look upon. Drilling was well done, borders neat, crop in advance of the district and the early prospect pleasing for a good yield, but this expectation was gradually reduced as the harvest approached.

PINCHER CREEK

Operators, Sandgren & Carlson

The autumn of 1929 and spring of 1930 were good for moisture at Pincher Creek. Seeding was started on the station April 28. Early summer was light in rainfall followed by a moderate amount in July. These conditions resulted in a fair crop being harvested of good quality grain. Wheat was sown at one and one-half bushels, barley at two bushels and oats at two and one-half bushels per acre. Harvest commenced on August 18.

RESULTS OF THE SEASON'S WORK AT PINCHER CREEK

Crops	Yield per acre, bushels or tons	Cost per bushel or ton	Cost per acre	Profit or (—) loss per acre
		$	$	$
Summer-fallow	.....	.....	9 73	.....
Wheat, Reward after fallow	12·40	1 59	19 70	—13 52
Wheat, Reward after alfalfa	20·00	0 57	11 34	— 1 40
Barley, O.A.C. No. 21, after oats	29·00	0 42	12 23	— 4 93
Oats, Alaska after wheat	18·00	0 56	10 06	— 5 58
Alfalfa hay	1·80	4 56	8 20	9 79
Sweet clover hay	1·20	5 53	6 64	5 36
Timothy hay	0·80	6 97	5 58	2 42

In the spring of 1930 a more vigorous policy was entered upon in an effort to control the weeds that are common to the station fields and also prevalent over the district. The nine fields comprising the station are now used in two four-year rotations and one field in alfalfa. The rotations are:—

1. Summer-fallow
   Wheat seeded to sweet clover and rye grass.
   Hay and plough soon after haying.
   Barley.
2. Summer-fallow
   Wheat.
   Alaska oats seeded to sweet clover. Oats taken for green feed.
   Hay and plough soon after haying.

For 1930 the forage crops on the station each show a profit.

Upon this farm and ranch coarse grains and hay crops are required in quantity. One thousand head of beef cattle were moved from ranch to farm in the autumn for winter feeding. Twelve cows are kept in milk for dairy pro-

ducts at the home farm and two hundred Yorkshire hogs are turned off from the swine herd each year. The continued use since 1916 of selected purebred males has brought the swine herd to a good standard of bacon type Yorkshire hogs. The beef herd has a Hereford base with the introduction from time to time of some Shorthorn blood.

SUNNYNOOK

Operator, Robert Montgomery

A dry autumn in 1929, light precipitation for early months of 1930 and less than one-half inch of rainfall for May brought forth the comment from the operator on June 12, that conditions were the driest in his experience. At the time of the supervisor's July 19 visit the estimate was for a six bushel per acre yield of wheat on fallow . The operator's work report dated August 21 in the space for "General Notes" bore this comprehensive statement "All crops on station completely hailed out July 25."

WHITLA

Operator, R. H. Babe

Seeding was started on this station April 16. Grain crops made a favourable stand following a uniform germination of seed. Summer moisture was wanting to carry the crop on to a good yield. For 1930 no month at Whitla gave as much as two inches precipitation until the after-harvest month of September was reached. The operator stated on July 4 that the crop was gone. However, at harvest time the yield of wheat was somewhat higher than had been anticipated.

Wheat was sown at the rate of one bushel and oats at two bushels per acre. Heading of the crop was done on August 5.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS' YIELDS AND COST OF PRODUCTION AT WHITLA

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow	.....	.....	.....	4 31	5 50	.....	.....
Wheat, Marquis after fallow	13·60	20·90	0 78	10 67	12 75	−3 81	9 26
Wheat, Marquis after wheat	7·20	13·38	1 66	11 95	12 30	−8 35	2 17
Three-year Rotation—							
Summer-fallow	.....	.....	.....	6 71	5 90	.....	.....
Wheat, Marquis after fallow	7·20	19·23	1 39	10 03	12 61	−6 41	8 10
Hay, oats replacing clover	0·50	.....	20 42	10 21	.....	−5 21	.....

YOUNGSTOWN

Operator, R. L. Coad

This district carried its winter snow well on to the close of March. First seeding on the station was done on April 19.

The moisture situation over this part of the province was so bad that tree belts were seriously injured. On June 12 the majority of clumps appeared to be for the most part killed back, if not entirely dead. A total precipitation

in 1929 of 8·42 inches and for the first five months of 1930, the amount of 3·29 inches left the soil moisture reduced to such an extent that even well established shelter belts were giving out. This was a matter of much regret to owners and settlers, who had planted and cared for their tree rows over the years with a certain amount of pride. In spite of these conditions, aided by good rains at the middle of June, the grain fields on the station farm held on well and pointed to a considerable amount of wheat being harvested. This prospect was shattered by a hail storm on August 2, which entirely destroyed all standing crops on the Coad farm. This storm took in a wide strip of Youngstown territory working varying degrees of damage throughout its course.

Harvest commenced on August 2 and one field of oats was cut as this plot was finished the hail storm broke, that destroyed the remaining crops on the station and upon the 600 to 700 acres of the operator's own wheat area.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS' YIELDS AND COST OF PRODUCTION AT YOUNGSTOWN

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Thre-Year Rotation—							
Summer-fallow				4 29	4 92		
Wheat, Marquis after fallow	Hailed out	14·58	No crop	7 94	11 50	−7 94	5 09
Wheat, Marquis after wheat	Hailed out	11·22	No crop	6 49	10 59	−6 49	2 23
Four-year Rotation—							
Summer-fallow				3 59	4 88		
Oats after fallow	Hailed out			4 81		−4 81	
Western rye grass, hay 1st year	1·75		4 39	7 68		9 82	
Western rye grass, hay 2nd year	1·50		3 94	5 91		9 09	
Three-year Rotation—							
Summer-fallow				5 25	5 57		
Wheat, Marquis after fallow	Hailed out	14·63	No crop	7 12	11 75	−7 12	7·25
Oats, replacing clover	19·00		0 46	8 66		−3 99	
Two-year Rotation—							
Summer-fallow				4 63			
Wheat, Marquis after fallow	Hailed out			9 83		−9 83	

IRRIGATED STATIONS

GLENWOODVILLE

OPERATOR, GLEN WOOD

Irrigation water was used on all station crops in 1930. The months of May and June were low in rainfall, in fact, not until July was the two inches in a month mark reached for precipitation.

This district has not to the present fully adopted crops that are best suited to an irrigation project. Continuance with grain as the lead line has left the land somewhat of a prey to weeds. Alfalfa, livestock and sugar beets when handled intensively give promise of permanent improvement to the locality.

A cutting of hay was made from the ten acre permanent pasture field on July 10. The yield of hay was 1.20 tons and gave a profit of $1.30 per acre. Following the hay crop this area was grazed to the extent of ninety horse days and ninety-one cow days. Computing the returns from the pasturing at a valuation of 5 cents per day per animal a profit of $2.20 per acre was obtained from the dual purpose use of this field.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS FOR ALFALFA AT GLENWOODVILLE

Crop	Yield per acre bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (—) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Alfalfa hay	2·90	2·90	4 87	14 07	16 28	14 92	14 48
Wheat, Marquis	21·25	.....	0 97	20 62	.....	— 9 99	.....
Barley, green for hay	0·90	.....	15 32	13 79	.....	— 4 79	.....
Oats, green for hay	1·35	.....	10 74	14 50	.....	— 1 00	.....

The season's low price for wheat may work to the ultimate advantage of the Glenwoodville territory by turning the attention of the farmers on the United Irrigation project more towards sugar beets.

KIPP

Operator, C. M. Nicol

Irrigation water was used upon all fields of this station in 1930, with the exception of corn. Ditching was done in May and by June 5 water was being applied. The months May and June were low in rainfall 1.20 inches coming in May and only 0.68 inches through June. With this summer drought irrigation proved itself to be the redeeming feature for the crop of 1930.

RESULTS OF THE SEASON'S WORK AND AN AVERAGE OF SIX YEARS' YIELDS AND COST OF PRODUCTION AT KIPP

Crop	Yield per acre bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (—) loss per acre	
	1930	Average six-years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Alfalfa hay	2·62	2·79	9 30	24 37	21 84	1 83	8 82
Wheat, Marquis	22·50	.....	1 15	25 96	.....	—14 62	.....
Corn, N.W. Dent	1·50	.....	18 94	28 41	.....	—20 91	.....
Oats, Banner	33·00	49·99	0 65	21 57	21 84	—13 20	2 75
Barley, O.A.C. No. 21	39·00	25·42	0 59	23 16	24 41	—13 26	—11 10

The ten acre field of permanent pasture carried seven head of dairy cattle for 123 days and seven head additional for 62 days, a total of 1,295 cow grazing days for a cost of 8½ cents per animal per day.

This station was maintained in a pleasing appearance throughout the season and presented a good view to the highway. In the month of September Mr. Nicol commenced the building of a stock barn, sixty feet by eighty feet in dimension. This barn will contribute much in convenience and improvement to the work of the farm.

The pen of Barred Rocks that the operator entered in the 1930 egg laying contest for Alberta finished in ninth position with four hens qualifying for registration.

The owner and operator of the Kipp station farm with others of the Lethbridge Northern project will benefit greatly through the findings of the 1930 Alberta Irrigation Commission.

REPORT OF ILLUSTRATION STATIONS IN NORTHERN SASKATCHEWAN AND NORTHEASTERN ALBERTA

N. F. Bell, B. S. A., Supervisor

In 1930 thirteen Illustration Stations were supervised from the Dominion Experimental Station, Scott. Nine of these were in Northern Saskatchewan and four in Northeastern Alberta.

THE SEASON

In this area the season of 1930 was on the whole, a favourable one for crop production. The season opened reasonably early and a few fields were sown about April 10, but a period of cold, stormy weather following that date, delayed farming operations generally until about the 22nd. The average date for the commencement of seeding on the thirteen stations this year, was April 26.

PRECIPITATION AT ILLUSTRATION STATIONS IN NORTHWESTERN SASKATCHEWAN AND NORTHERN ALBERTA, FROM APRIL 1 TO AUGUST 31, 1930

Station	April	May	June	July	August	Total	6-year average
	in.	in.	in.	in.	in.	in.	in.
Glenbush, Sask.	0·34	1·29	4·99	2·85	1·53	11·00	.....
Guernsey, Sask.	0·43	2·76	2·22	1·80	0·42	7·63	9·39
Kindersley, Sask.	1·47	0·46	3·49	4·68	1·42	11·52	8·10
Lloydminster, Sask.	0·35	1·28	7·85	4·09	0·53	14·10	8·71
Loverna, Sask.	1·76	0·74	4·40	2·10	1·22	10·22	3 years 7·21
Marcelin, Sask.	0·25	2·27	3·92	1·40	0·59	8·43	6·61
Meadow Lake, Sask.	0·48	1·92	5·04	1·31	1·26	10·01	3 years 9·00
Meanook, Alta.	0·60	2·27	2·06	3·17	1·29	9·39	.....
Meota, Sask.	0·39	1·28	4·75	2·79	0·53	9·74	8·86
Spruce Lake, Sask.	0·48	0·70	2·72	1·79	1·14	6·83	7·37
St. Paul, Alta.	0·72	0·96	5·79	3·05	1·01	11·53	3 years 10·22
Tisdale, Sask.	0·32	2·45	3·91	1·10	0·54	8·32	2 years 7·33
Wainwright, Alta.	1·95	0·80	7·20	2·75	1·81	14·51	8·55

The total precipitation for the season was high and its distribution was well spread over the growing season. From the standpoint of precipitation, 1930 leaves but little to be desired in Northern Saskatchewan and Northern Alberta.

Wind caused considerable damage to crops in certain districts. Soil drifting destroyed a large acreage and re-seeding was found necessary in come cases. At the Guernsey station, parts of two fields had to be re-seeded.

Hail storms were more general than usual this season, doing considerable damage in places. Fortunately however, the crops on the Illustration Stations escaped injury from this cause. Cutworms did some damage in a few localities, but their ravages were not wide spread.

Considered in a general way, crops were good and the quality high. The average yield of wheat on 70 fields covered in this report, was 32.2 bushels per acre, oats 63.7 and barley 43.8. Grades 1 and 2 were obtained for most of the grain graded. The hay fields that survived the dry season of 1929 yielded well. The average yield of hay on 27 fields was 1.74 tons per acre. Sweet clover, western rye and alfalfa constituted the bulk of the hay, although there was one field of timothy and two fields with a mixture in which brome grass predominated. Seven other fields failed to survive. Four of these were sown to oats, one to barley and two were fallowed.

In the northern districts considerable interest is shown in the relative merits of Marquis, Reward and Garnet wheats. On most of the Illustration Stations at least two of these varieties are grown under comparable conditions, and on a few of the Stations the three varieties are grown side by side both on fallow and on stubble.

Where Marquis does well and frost is not regarded as a serious factor, Reward is grown as a comparison, but in some of the more Northern stations, the growing of Marquis has been almost discontinued and its place taken by Garnet or Reward.

In six fields where the three varieties were tested out together, the average yields were Marquis, 35.7 bushels per acre, Reward 33.3 bushels and Garnet 31.4 bushels par acre. In eight trials where Marquis and Reward were compared, the yields were Marquis 33.4, and Reward 32.5 bushels per acre, and in twelve fields where Reward and Garnet were compared, the yields were Reward 34.5 and Garnet 32.6 bushels per acre.

For quality, Reward has a distinct advantage over either of the other varieties in these tests. Where weather conditions were favourable for harvesting, Marquis and Reward graded No. 1 while Garnet graded No. 2 although, apparently as good a sample of grain. Where harvest weather was unfavourable, Reward and Garnet graded No. 2 and Marquis, being later, suffered more and was graded No. 4.

The unsatisfactory weather at harvest time made it difficult to definitely fix a date of maturity for these varieties, but considering only those fields where a reasonable comparison could be made, Marquis matured in an average of 115 days, Reward in 111 days and Garnet in 109 days. In districts where damage from frost is infrequent, Marquis remains the standard variety. Farther north where frost is a hazard, Garnet and Reward wheats are replacing Marquis with good results.

SEED GRAIN

The Illustration Stations have continued to be a source of supply for good, clean seed of the most suitable varieties of grain. In wheat, Marquis led in bushels sold with a total of 1,911 bushels, but when we consider that 1,500 bushels of that was sold at Kindersley, which is located in township 29 and is our most southerly station, it is evident that Garnet and Reward with a total sales of 1887 and 1166 bushels respectively, are gaining popularity in the more northern sections. In some districts where Illustration Stations have operated for a number of years, it is estimated that 90 per cent of the grain growth is the product of seed originally grown on the Illustration Station. Sales from the 1929 crop were made to 70 farmers and to one municipality (which resold to farmers) giving the following totals, wheat 5,461 bushels, oats 3,900 bushels, barley 310 bushels and peas 35 bushels, making a total of 9,706 bushels of seed grain sold.

POULTRY

Improvement in poultry has been featured at most of the stations. At some of the newer stations little more than preparatory work has been done as yet, but the older stations are contributing their share toward the betterment of the poultry business in their respective districts. The sales of pure bred poultry and eggs for breeding purposes this season, were as follows: Cockerels 71 pullets 10, hatching eggs 1,562, Bronze turkeys—males 3, females 5, and 100 hatching eggs.

HORTICULTURE

The progress made by some of the operators in developing beautiful home surroundings is encouraging to those who have ambition to improve their grounds. In some districts where trees grow well, little difficulty is experienced, but when one finds a tall, thick, and wide shelter belt enclosing the garden and orchard of bush and tree fruits, on land that a few years ago was bald prairie, there is

evidence of faith, work and good judgment. Assistance and encouragement has been given in the planning and planting of shelter belts, fruit trees and bushes, as well as with the farm garden.

FIELD MEETINGS

Field meetings were held early in August at Loverna, Kindersley, Meota, Meadow Lake and Spruce Lake. Agricultural problems were discussed by representatives of the University of Saskatchewan, the Provincial Department of Agriculture and the Dominion Experimental Stations. Visitors were conducted over the work on the station by the supervisor. The attendance was good and interest keen at these meetings. The whole hearted support of local Boards of Trade and Agricultural Societies were apparent at each place.

A conference of the operators of Illustration Stations in this territory, was held at Scott on July 17. After short addresses by the Superintendent and the Chief Supervisor, a survey of the Station was made under the guidance of the Superintendent and his assistants who explained the various phases of experimental work carried on at this Station. A round table conference was held that evening, when the work of the Illustration Stations was discussed.

During the winter months, the supervisor addressed meetings held by the Guernsey Herd Improvement Association, Loverna Board of Trade and Kindersley Agricultural Society.

COST OF PRODUCING CROPS

The following values were used as a basis in determining the cost of producing crops and calculating the return values.

COST VALUES

Rent	8 per cent of land value
Taxes	40 cents per acre
Use of machinery	$1.35 per acre
Manual labour	25 cents per hour
Horse labour	6 cents per hour
Threshing	Rates prevailing in the district
Binder twine	Rates prevailing in the district

COST OF SEED

Wheat	Per bushel	$1 25
Oats	"	0 60
Barley	"	0 60
Fall rye	"	0 70
Spring rye	"	0 70
Corn	Per pound	0 07
Sunflowers	"	0 11
Sweet clover	"	0 16
Western rye grass	"	0 17
Alfalfa	"	0 52
Timothy	"	0 12

RETURN VALUES

Wheat, No. 1 Nor.	Per bushel	$0 53
Wheat, No. 2 Nor.	"	0 51
Wheat, No. 3 Nor.	"	0 48
Wheat, No. 4 Nor.	"	0 42
Wheat, No. 5 Nor.	"	0 39
Oats, 2 C.W.	"	0 18
Oats, 3 C.W.	"	0 15
Extra 1 Feed	"	0 15
Oats, 1 Feed	"	0 13
Barley, 3 C.W.	"	0 12
Barley, 4 C.W.	"	0 09
Barley, 5 C.W.	"	0 08
Fall rye	"	0 20
Hay	Per ton	8 00
Oat sheaves	Per sheaf	0 03
Oats, green feed	Per ton	8 00
Corn and sunflower silage	"	2 50
Corn fodder	"	5 00
Sunflower fodder	"	4 00

The value of grain was obtained by taking the average of the actual price paid for grain during the threshing period from September 1 to November 1 at stations, taking 24 cents freight rate and adjusting the price where a different freight rate prevailed. This gives as nearly as possible the actual price of grain at the shipping point nearest the Illustration Station.

Two-thirds the cost of fallow was charged to the first crop and one-third to the second crop where rotations covered three or more years. The costs per bushel or ton are given to the nearest cent. Summer-fallowing figures are included in the table for purpose of information only.

In fields where hay failed the first year and were re-seeded to oats or barley, the cost of grass or clover seed was charged against that crop, but when the field was fallowed, the cost of grass seed was charged against the rotation.

GLENBUSH

J. C. GRANT, OPERATOR

Spring work on the land started late in April. The first seeding was done on the 29th. Moisture conditions were very favourable for germination and growth was fairly good until May 21 when frost cut back most of the grain that was through the ground. With favourable growing conditions the grain made rapid recovery and soon gave promises of an excellent crop. In the case of sweet clover and alfalfa the results were not so good. The tiny plants had just exhausted their supply of food from the seed and were not sufficiently strong to withstand the frost and did not recover after being frozen back.

SUMMARY OF YIELDS, COST, AND PROFIT OR LOSS AT GLENBUSH FOR 1930

Crop	Yields per acre bushels or tons for 1930	Cost per ton or bushel	Cost per acre	Profit or loss per acre
		cts.	$	$
Fallow			6 01	−6 01
Garnet wheat	41·5	34	13 95	7 21
Reward wheat	42·0	34	14 38	7 88
Banner oats	92·0	16	14 88	1 68
Fallow			6 01	−6 01
Garnet wheat	47·5	30	14 43	9 79
Garnet wheat	31·5	36	11 42	4 65
Banner oats	88·0	17	14 61	1 23

This being the first crop year since Glenbush station was established, the rotations are not yet in proper order, but the crop plan includes two rotations, one of which is of a four-year cycle as follows: first year fallow, second year wheat, third year oats seeded down with sweet clover, and fourth year hay and breaking.

The second rotation covers six years with the following crops: first year fallow, second year wheat, third year wheat, fourth year oats seeded down with Western rye grass and sweet clover, fifth year hay, and sixth year hay or pasture. A demonstration test field is seeded down to alfalfa.

A heavy yield of good grain was harvested before the frost of September 1 and Mr. Grant was fortunate in threshing his crop early before the bad weather set in. High grades were received for wheat and oats.

GUERNSEY

C. H. SNIDER, OPERATOR

Seeding commenced four days earlier than in 1929 and five days earlier than the seven year average for this Station. The season was not a favourable one for crop production in this district. High winds prevailed during, and immediately following seeding, and caused very serious damage to grain and corn crops. A large acreage in the Guernsey district had to be reseeded last spring and dry, hot weather in July and August reduced the yields. The Illustration Station did not suffer as badly as some of the land in the vicinity, but all the yields were reduced considerably. The corn was completly destroyed by wind. Barley had to be re-seeded and the second crop was almost lost, because of damage done by soil drifting. A comparison of yields of this year's crop is of little value.

Soil drifting and perennial sow thistle are the two most serious problems met in the Guernsey district and all rotations are planned to aid in the control of these problems. There are four rotations in use on this Station, two two-year rotations, one three-year and one four-year rotation.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT GUERNSEY

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (–) loss per acre	
	1930	5-year average	1930	1930	5-year average	1930	5-year average
			$	$	$	$	$
Two-year Rotation—							
Sweet clover	0·50	1·18	12 72	6 36	9 93	–2 36	1 94
Wheat	10·0	13·8	0 87	8 73	11 66	–3 43	2 59
Average for rotation	.....	.....	.....	.....	.....	–2 90	2 26
Two-year Rotation—							
Corn	Nil	0·96	.....	5 70	13 97	–5 70	–9 41
Wheat	10·0	13·8	0 87	8 20	11 40	–3 43	2 95
Average for rotation	.....	.....	.....	.....	.....	–4 56	–3 23
Four-year Rotation—							
Fallow	.....	.....	.....	4 39	6 79	.....	.....
Wheat, Garnet	9·0	14·3	1 06	9 58	14 27	–4 98	2 04
Hay, sweet clover	1·25	1·74	6 80	8 50	8 53	1 50	8 56
Oats, Victory	38·0	43·8	0 22	8 40	12 91	–1 56	6 72
Average for rotation	.....	.....	.....	.....	.....	–1 26	4 33
Three-year Rotation—							
Wheat, Garnet	7·0	17·2	1 30	9 08	12 69	–5 51	4 76
Barley	20·0	27·6	0 44	8 88	11 45	–6 88	2 03
Hay, sweet clover	0·50	1·40	13 14	6 57	9 45	–2 57	6 17
Average for rotation	.....	.....	.....	.....	.....	–4 99	4 32
Demonstration Test Fields—							
Alfalfa	0·50	0·80	8 70	4 35	4 55	–0 35	10 23
Brome grass	0·81	.....	6 98	5 65	.....	2 12	.....
Wheat, Garnet	7·0	–{3-years 15·5	.....	.....	.....	.....	.....
Wheat, Reward	7·0	–{3-years 14·3	.....	.....	.....	.....	.....

On account of the extremely low values of grain and hay every rotation shows a loss, but the above table shows that some rotations tend to keep the loss low in bad years and to keep the average profit fairly high over a period of years.

The two-year rotation of sweet clover and wheat, shows a loss for 1930, but a fair profit over a five year period. This rotation has the disadvantage of

producing rather a larger amount of sweet clover than most farmers have stock to feed. It keeps sow thistle fairly well under control. The other two-year rotation of corn and wheat has shown a loss not only in 1930, but also for the five year average. This year completes a five year trial and this rotation will be discontinued because of its heavy losses. The three-year rotation of wheat, barley and hay appears at a disadvantage this year on account of the barley crop being almost destroyed by the wind, but the five year average is good. If this rotation were adopted as a general farm rotation, the barley field could well be divided, sowing part of the field to oats. The proportion of each crop would depend upon the amount of oats and barley that could be fed advantageously.

The four-year rotation of fallow, wheat, hay and oats, has been a very successful rotation here. It differs from the other rotations at this Station in that it has a fallow covering one whole season and part of another. This arrangement has both advantages and disadvantages. The wheat crop following the fallow is usually clean and free from sow thistle. The second crop, being sweet clover, usually produces some sow thistle which is cut with the hay when coming into bloom. As soon as the hay is off the land is ploughed thus giving the sow thistle a severe setback. In the fourth year a good crop of oats is usually produced and the land ploughed in the fall if possible. In any case, fall cultivation is desirable. A small loss is shown for this rotation this year, due to the fact that a considerable portion of the wheat was destroyed by wind. The low price of grain is another factor.

An interesting trial of fertilizer was made in the second year of this rotation. Half of the wheat field was treated with superphosphate. The wheat on the treated half got away to a much better start and was sufficiently well developed when the drifting started to withstand the storm, while the grain on the untreated half had not reached that stage of development. The drift line followed very closely to the fertilizer line, consequently nearly all the wheat on the field grew on the fertilized part.

Reward and Garnet wheat were again tested out under similar conditions, but a comparison of yields for this year is of little value. The yields given are for the whole area seeded, disregarding blown out spots. The three-year average is also shown. The slight advantage in yield favouring Garnet is offset by a difference of almost a grade in favour of Reward.

KINDERSLEY

Robert Simpson, Operator

Seeding commenced on April 16 which was eight days earlier than last season and eight days earlier than the six-year average for this Station. The precipitation was not only sufficient, but fairly well distributed throughout the growing season. The total rainfall for the five months ending August 31 was 11·52 inches, which is almost 3·5 inches more than the six-year average for the same period at Kindersley.

Considerable damage to the crop was caused by the high winds early in the season, although none of the fields on the Station had to be reseeded. The yields on some of the fields were reduced considerably by the severe wind storms.

There are three rotations illustrated at this Station, two of these are subdivided and appear in the table as separate rotations to show the results of the tests made. In two of the fields sweet clover, which is usually a safe crop, failed and the field was reseeded with oats and cut for green feed. The cost of clover seed was charged against the oat crop.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT KINDERSLEY

Rotations and crops	Yields per acre, bushel or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	3-year average	1930	1930	3-year average	1930	3-year average
			$	$	$	$	$
Six-year Rotation—							
Fallow	.....	.....	.....	4 83	7 30	.....	.....
Wheat, Marquis	30·0	31·0	0 44	13 22	16 38	2 68	10 95
Oats, Banner	52·5	50·7	0 18	9 58	12 82	−0 13	5 00
Hay, sweet clover	1·75	1·34	4 58	8 01	8 55	5 99	3 62
Wheat, Marquis	22·0	19·9	0 43	9 43	11 16	2 23	5 04
Sweet clover (oat substitute)	1·20	2 years 1·75	7 68	9 22	9 13	0 38	5 74
Average for rotation	.....	.....	.....	.....	.....	1 86	5 06
Six-year Rotation—							
Fallow	.....	.....	.....	4 83	7 30	.....	.....
Wheat, Marquis	30·0	31·0	0 44	13 22	17 46	2 68	10 95
Oats, Banner	52·5	50·7	0 18	9 58	12 82	−0 13	5 00
Oats in rows	1·50	1·13	5 17	7 75	8 47	4 25	3 06
Wheat, Marquis	14·0	18·3	0 62	8 63	9 98	−1 21	6 24
Sweet clover (oat substitute)	1·20	2 years 1·75	7 68	9 22	9 13	0 38	5 74
Average for rotation	.....	.....	.....	.....	.....	1 00	5 17
Three-year Rotation—							
Fallow (ploughed)	.....	.....	.....	6 84	7 69	.....	.....
Wheat	34·5	29·8	0 44	15 29	16 83	3 00	8 58
Wheat	8·5	11·5	1 19	10 09	11 94	−5 59	−3 58
Average for rotation	.....	.....	.....	.....	.....	−0 86	1 67
Three-year Rotation—							
Fallow (ploughless)	.....	.....	.....	5 25	6 46	.....	.....
Wheat	35·0	29·3	0 40	14 28	16 07	4 27	8 50
Wheat	8·5	13·0	1 12	9 56	11 24	−5 06	−3 10
Average for rotation	.....	.....	.....	.....	.....	−0 26	1 80
Two-year Rotation—							
Fallow	.....	.....	.....	5 25	6 46	.....	.....
Wheat	34·5	24·1	0 46	15 98	16 27	2 31	4 62
Average for rotation	.....	.....	.....	.....	.....	1 16	2 31
Demonstration Test Fields—							
Marquis on fallow	30·0	2 years 25·0	0 44	13 22	.....	2 68	.....
Reward on fallow	26·5	23·4	0 49	12 87	.....	1 18	.....
Alfalfa hay	0·90	.....	7 07	6 36	.....	0 84	.....

The six-year rotations show a profit both for 1930 and for the three-year average, while the three-year rotation shows a loss in each case. The six-year rotation, using sweet clover in the fourth year, shows a slightly larger profit this year than does the rotation using oats in rows as a fallow substitute in the fourth year. Wheat after sweet clover outyielded wheat after oats in rows this year, although last year the balance was in favour of wheat after oats in rows. Oats in rows as a fallow substitute is only satisfactory when it is kept clean and its success at this Station is due largely to the fact that the operator keeps the rows well cultivated.

The three-year rotation is also divided. In one half the fallow is ploughed, while in the other half the ploughless fallow method is used. There appears to be but little difference in the yields obtained under the two systems, but where deep rooted perennial weeds are found it appears advisable to plough the land at least once in three years. Annual weeds can be controlled as well by surface cultivation properly done, as by ploughing.

The two-year rotation of fallow and wheat is one that finds favour in the dry districts. It distributes labour over a longer season, permits seeding to

be done early and for growing pure seed, has a distinct advantage of being free from volunteer grain of other kinds. It has the disadvantage of having half the land idle each year against which must be charged rent, machinery charges and taxes which must be added to the cost of the succeeding crop. Soil drifting soon causes trouble in a rotation of this kind and a number of our worst plant diseases live through the fallow and infect the succeeding crop unless some other crop is grown that will not carry the disease.

During the year Mr. Simpson sold 1,500 bushels of seed wheat (Marquis 10 B), 200 bushels Banner oats and 10 bushels Early Ohio potatoes. Eight Barred Rock cockerels and 79 settings of eggs were sold to neighbours.

On August 7 a Field meeting was held on this Station with an attendance of about 100 people.

LLOYDMINSTER

Hugh Hill, Operator

The summer of 1930 had the highest precipitation ever recorded on this Station. For the five months ending August 31, 14·10 inches of rain fell. This was 9·86 inches more than for the same period in 1929, and 5·39 inches above the average for the past six years at this Station.

Grain crops throughout the district were good and some very high yields were obtained. Late rains, however, delayed threshing and in many cases reduced the quality of grain to "tough" grades. There was very little tame hay in the district this year and none on the Illustration Station. The drought of last season caused a failure in both fields. There are three rotations on this station, but one of these is divided to compare Reward and Garnet wheat, and appears in the table as two rotations.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT LLOYDMINSTER

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	6-year average	1930	1930	6-year average	1930	6-year average
			$	$	$	$	$
Three-year Rotation—							
Hay on fallow	Nil	0·92	.....	8 86	8 37	−8 86	3 27
Wheat	32·0	28·0	0 33	10 67	13 34	5 65	15 00
Oats	69·0	48·6	0 17	11 80	14 23	0 62	7 93
Average for rotation	.....	.....	.....	.....	.....	−0 86	8 73
Five-year Rotation—		3 years			3 years		3 years
Fallow	.....	.....	.....	5 53	6 31	.....	.....
Wheat	41·0	24·7	0 38	15 40	13 54	5 51	4 48
Wheat	45·0	26·7	0 34	15 33	14 44	3 57	4 06
Oats seeded	73·5	42·9	0 17	12 31	12 20	0 92	0 62
Hay and breaking	Nil	0·60	.....	8 27	6 81	−8 27	−2 06
Average for rotation	.....	.....	.....	.....	.....	0 35	1 42
Three-year Rotation—		2 years			2 years		2 years
Fallow	.....	.....	.....	5 53	5 92	.....	.....
Wheat, Garnet	38·0	22·5	0 39	14 71	13 55	4 67	0 49
Wheat, Garnet	40·0	23·0	0 35	14 14	12 71	6 26	1 22
Average for rotation	.....	.....	.....	.....	.....	3 64	0 57
Three-year Rotation—							
Fallow	.....	.....	.....	5 53	5 92	.....	.....
Wheat, Reward	38·5	23·2	0 38	14 76	13 74	4 87	0 90
Wheat, Reward	37·0	21·8	0 37	13 84	12 74	5 03	0 59
Average for rotation	.....	.....	.....	.....	.....	3 30	0 50
Demonstration Test Field—							
Trebi barley	56·5	.....	0 26	14 65	.....	−7 87	.....

The three-year rotation of wheat, oats and hay has shown a substantial average profit of $8.73 over a six-year period, but shows a small loss this year. This loss was due to the failure in the hay field which was fallowed instead of being sown to greenfeed or oat hay. In some sections this rotation is giving splendid results. If the land is reasonably clean it can be kept clean with this rotation if properly handled. The land on which this rotation is located, was once the camp ground for the early settlers freighting in feed from the south and east. This introduced stinkweed which was permitted to grow undisturbed for a few years. It has never been eradicated. In some seasons it appears to be well under control, but when favourable conditions for its growth arrive, it is there again to cause trouble. This rotation will not eradicate stinkweed, but with proper care will hold it in check.

In the three-year rotation of fallow, wheat and wheat, Garnet and Reward wheats were again tested side by side. During the past two years the yields have been quite comparable. The quality was about the same, and grade 2 Northern was obtained for both varieties. In date of maturity they were equal. A field of Marquis grown under comparable conditions close by, yielded 45 bushels per acre, but was 16 days later in maturing. The earlier varieties were threshed before September rains and graded No. 2 Northern, while Marquis was in the stook during a long period of rain and snow which reduced the quality to No. 4 and was dangerously near the moisture limit.

Three kinds of wheat were grown under comparable conditions on land that was fallowed in 1928 and grew a crop of wheat in 1929. The return values of Garnet, Reward and Marquis wheat were as follows: Garnet yielded 40·0 bushels per acre which graded No. 2 Northern, at 51 cents per bushel was worth $19.81 per acre. Reward yielded 37·8 of No. 2 Northern per acre, at 51 cents per bushel, brings $19.29, and Marquis yielded 45 bushels per acre which graded No. 4, at 42 cents per bushel, makes a gross return of $18.06.

LOVERNA

ROBERT BRUMWELL, OPERATOR

Spring opened about the average date for this district and seeding was begun on April 26. Precipitation for the month of April was 1·76 inches, which provided sufficient moisture for good germination. May was comparatively dry, with only 0·74 inch of rain. High winds prevailed during the month and at times reached gale velocity, doing serious damage to crops and necessitating the re-seeding of a considerable portion of land. In June 4·40 inches of rain fell. Crops made good growth and gave prospects of fair returns, but dry, hot weather early in August reduced the yields considerably and only an average crop was harvested.

This station was established in 1927, but the rotations were changed this year, therefore, the average yields for four years do not appear in the table except for the two-year rotation and for the hay fields. The four-year average yield of Marquis wheat after fallow is 27·6 bushels, which compares very favourably with most good districts.

In this district the precipitation is rarely more than is necessary to produce a good crop and is sometimes very limited. The rate of evaporation is usually high and the conservation of moisture is of vital importance, therefore, cultural practices should be adopted that will reduce the evaporation of soil moisture to the lowest possible degree. This is not always easy to do, particularly if the land is weedy.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT LOVERNA

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (—) loss per acre	
	1930	3-year average	1930	1930	3-year average	1930	3-year average
			$	$	$	$	$
Six-year Rotation—							
Fallow				4 72			
Wheat, Marquis	22·5		0 54	12 14		—0 66	
Hay, barley hay, 1930	1·25		8 75	10 94		—3 44	
Corn	2·00		5 22	10 44		—0 44	
Wheat, Marquis	23·0		0 39	9 08		3 11	
Oats, Banner	55·8		0 19	10 57		—0 53	
Average for rotation						—0 32	
Three-year Rotation—							
Fallow				4 72			
Wheat, Marquis	22·5		0 52	11 60		0 34	
Wheat, Marquis	18·8		0 58	10 90		—0 94	
Average for rotation						—0 20	
Two-year Rotation—							
Fallow				4 72	5 87		
Oats, Banner	40·8	23·3	0 32	13 01	12 31	—5 67	—6 19
Average for rotation						—2 84	—3 10
Demonstration Test Fields—							
Brome grass	1·75	1·64	2 76	4 83	6 12	9 17	7 12
Western rye grass	1·00	1·28	4 52	4 52	5 85	3 48	6 25
Alfalfa	1·75	1·42	2 76	4 83	6 52	9 17	7 22
Alfalfa and brome	1·25	1·25	3 74	4 67	5 96	5 33	6 18

On this station there are three rotations and five demonstration test fields. The longest rotation is one of six years duration consisting of fallow, wheat, hay, corn, wheat and oats. Until this season, a crop of fall rye was also grown, but on account of the volunteer rye that appeared in the succeeding wheat crop, the practice was discontinued. In this rotation the bare fallow comes once in six years. Wheat is grown on fallow and usually gives a satisfactory crop. Sweet clover and western rye grass are sown with the wheat and a hay crop is taken off in the third year in July, immediately after which, the land is broken up and a partial fallow is prepared for corn in the fourth year.

Wheat after corn has yielded as well or slightly better than after bare fallow. Oats are grown in the sixth year. There is no rotation that will meet all the requirements of this district with any degree of certainty, but this one offers several advantages. Bare fallow tends to cause soil drifting. Surface cultivation early in the season followed by ploughing in July, helps to keep the top soil from drifting and the fallow comes only once in every six years. The hay crop is reasonably safe in this district, although this year it failed in this rotation and a crop of greenfeed was substituted. Corn follows hay with a fair degree of success. The yield as a rule is not high, and cannot be considered a paying crop in itself, but since it keeps the land in better condition than does bare fallow, and the returns from corn pay most of the expenses, it therefore plays a useful part in the rotation. Mr. Brumwell harrows his corn when it is quite high and has little difficulty in keeping it free from weeds.

Reference to the table will show that while the yields are reasonably good this year, the extremely low price of grain causes a loss in each field with the exception of wheat after corn. The corn field shows a loss of 44 cents per acre as compared to a loss of $4.72 for fallow—two-thirds of which must be charged to the succeeding crop.

The three-year rotation is commonly used in this district. It has certain advantages, but these gradually disappear as the land grows older. Weeds

increase, and with the reduction of root fibre, soil drifting becomes a serious problem.

A two-year rotation is used for the production of seed oats of high quality. The seed is free from volunteer grain of other kinds because it is grown on fallow each year.

Four fields of hay were sown in 1927 and the yields, as shown in the table, are very satisfactory.

This operator has been very successful in growing a fine shelter-belt around his buildings, where only a few years ago the bald prairie offered no shelter from the winter winds and drifting snow. Small fruits are doing well within this shelter.

Bronze turkeys are a very important branch of this farm's operations, about 100 being raised each year, for which a very high grade is obtained.

A very successful field day was held here on August 6. About 75 people were in attendance. After a visit to the fields, where the various crops and rotations were discussed, the meeting was addressed by representatives of the Provincial Department of Agriculture and the Dominion Experimental Station, Scott.

MARCELIN

J. B. Godbout, Operator

Spring opened about the usual date, with seeding operations beginning the last week in April. The rainfall was not heavy, but was sufficient to produce a fair crop. A total of 8·34 inches was recorded for the season.

Two rotations are used at this station. One of these is a three-year rotation of fallow, wheat, wheat. Half of each field was sown to Reward and the other half to Garnet in order that a fair comparison can be made of these two varieties. There was but little difference found between them for yield, quality or time required for maturity either for this season or the two-year average. Reward yielded about one bushel per acre more than Garnet this year, but Garnet was in the lead by a similar amount last year.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT MARCELIN

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	2-year average	1930	1930	2-year average	1930	2-year average
			$	$	$	$	$
Three-year Rotation—							
Fallow				7 31			
Wheat, Garnet	25·0	21·0	0 60	15 11	15 29	−2 36	1 61
Wheat, Garnet	25·0	18·0	0 55	13 76	13 76	−1 01	−0 54
Average for rotation						−1 12	0 36
Three-year Rotation—							
Fallow				7 31			
Wheat, Reward	26·0	21·0	0 60	15 47	15 49	−2 21	1 04
Wheat, Reward	26·0	18·0	0 54	14 12	13 96	−0 86	−1 11
Average for rotation						−1 02	−0 02
Five-year Rotation—							
Fallow				7 31	7 38		
Wheat, Marquis	29·3	23·7	0 55	16 20	16 38	−0 67	2 58
Wheat, Marquis	28·0	20·5	0 53	14 86	14 71	−0 02	0 80
Oats, Banner	58·0		0 20	11 83	10 74	−1 39	0 84
Hay, western rye and sweet clover	2·50	1·94	4 07	10 18	9 77	9 82	7 14
Average for rotation						1 55	2 27
Demonstration Test Field—							
Alfalfa and western rye grass	3·00	1·88	2 40	7 20	7 35	16 80	8 40

A five-year rotation of fallow, wheat, wheat, oats and hay, appears to be a very satisfactory one for this district. Where conditions warrant the keeping of a reasonable amount of live stock and where there is no permanent pasture, a sixth year may be added to this rotation to provide pasture. Western rye grass, sweet clover and alfalfa grow well here and mixed farming can be carried on advantageously.

MEADOW LAKE

MARTIN GRAN, OPERATOR

This station is located in township 59, range 17, west of the third, and is the most northerly Illustration station in Saskatchewan.

The season opened in good time and field work began on April 26. Seeding commenced three days later. Precipitation records show a total of 10·01 inches for the five months ending August 31, and at no time during the season did crops suffer from drought. The first killing frost was recorded on September 26. Twenty-six days before this, all tender vines and flowers were frozen a hundred miles further south.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT MEADOW LAKE

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	2-year average	1930	1930	2-year average	1930	2-year average
			$	$	$	$	$
Three-year Rotation—							
Fallow				5 39			
Wheat, Reward	42·0	39·8	0 32	13 57	14 10	8 69	16 75
Wheat, Reward	31·0	30·5	0 38	11 71	12 35	4 72	11 54
Average for rotation						4 47	9 43
Three-year Rotation—							
Fallow				5 39			
Wheat, Garnet	31·0	35·3	0 39	12 19	13 40	3 62	15 09
Wheat, Garnet	29·0	32·0	0 38	11 32	12 31	3 73	13 37
Average for rotation						2 45	9 49
Three-year Rotation—							
Fallow				5 39			
Wheat, Marquis	45·0	40·3	0 30	13 66	13 95	10 19	16 40
Wheat, Marquis	26·0	31·8	0 44	11 31	12 61	2 47	13 79
Average for rotation						4 22	10 06
Five-year Rotation—							
Fallow				5 39			
Wheat, Garnet	34·0	36·0	0 28	9 56	12 76	7 78	15 12
Oats, Banner	61·0	83·5	0 17	10 61	13 78	0 37	15 67
Barley, Trebi	55·0	61·7	0 21	11 64	13 68	−5 04	5 00
Hay, sweet clover and western rye grass	1·75	1·75	4 34	7 60	7 06	6 40	8 69
Average for rotation						1 90	8 90
Demonstration Test Fields—							
Hay, western rye grass	2·00	1·75	2 55	5 10	5 33	10 90	10 17
Hay, alfalfa	1·25	1·25	4 97	6 21	5 94	3 70	5 27
Hay, timothy	2·00	1·63	2 55	5 10	5 20	10 90	9 06

Yields of hay were again satisfactory. The alfalfa killed out in patches but gave 1·25 tons per acre of choice hay. Western rye grass and timothy each yielded 2·00 tons per acre. Sweet clover and western rye (mixed) in the five-year rotation, yielded 1·75 tons, which would indicate that tame hay grows well at this station.

In the variety test where Marquis, Reward and Garnet were again compared, the yields were fairly close with Marquis leading on fallow and in the two-year average. Reward led for the average of two fields (fallow and stubble) this year. Garnet was slightly behind in yield. In quality Marquis and Reward graded 1 Northern and Garnet graded 2 Northern.

Interest in the work was shown by the number of farmers who visited the station seeking information.

Last season being the first crop year for the station, the supply of seed was not great, although about 500 bushels were sold to 24 farmers.

A very successful field day was held on August 12. The attendance was over sixty and a keen interest was shown in the work.

MEANOOK

Fred Macintyre, Operator

This is the first crop year this station has been in operation. Only a small acreage was available for crop this season, but preparations were made for extending the work next year. The season has been favourable and precipitation was sufficient for the needs of the crop. There was no frost or hail damage at this point.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT MEANOOK, ALTA., FOR 1930

Crop	Yields per acre, bushels or tons	Cost per bushel or ton	Cost per acre	Profit or (—) loss per acre
		$	$	$
Three-year Rotation—				
Fallow	.....	.....	5 96	—2 93
Garnet wheat	18·5	0 67	12 37	—2 06
Banner oats	47·5	0 22	10 61	—1 67
Part of Six-year Rotation—				
Reward wheat	18·5	0 67	12 37	—2 93
Garnet wheat	15·5	0 75	11 50	—3 79
Banner oats	49·5	0 26	12 99	—3 88

The catch of sweet clover and western rye grass was not uniform, but in places it was good. Yields of grain were fair and the quality good.

MEOTA

Walter Tait, Operator

The season of 1930 was very favourable for crop production at this station. Seeding commenced on April 21, which is a week earlier than the average date of the past ten years. The precipitation for the five growing months was well distributed over the season and made a total of 9·74 inches, or 0·88 above the six year average for this district.

The crop started off well in the spring, and with the exception of two fields where cutworms did some damage, continued well throughout the season. The average yield of wheat from seven fields was 38·7 bushels per acre, and hay yielded 1·60 tons per acre.

Three rotations are used at this station. The three-year rotation of fallow, wheat and wheat, is used as a standard by which the other rotations may be compared. It is also used to test out new varieties of wheat. This rotation is not recommended for this district.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT MEOTA

Rotations and crops	Yields per acre, bushel or tons		Cost per bushel or ton	Cost per acre		Profit or (—) loss per acre	
	1930	2-year average	1930	1930	2-year average	1930	2-year average
			$	$	$	$	$
Three-year Rotation—							
Fallow				6 89	7 85		
Wheat, Garnet	41·0	32·5	0 40	16 33	16 88	4 58	8 46
Wheat, Garnet	30·0	22·5	0 47	14 24	14 88	1 06	2 08
Average for rotation						1 88	3 51
Three-year Rotation—							
Fallow				6 89	7 85		
Wheat, Reward	45·0	32·4	0 37	16 73	16 78	7 12	7 42
Wheat, Reward	34·0	22·8	0 43	14 64	14 80	3 38	1 32
Average for rotation						3 50	2 91
Three-year Rotation—		8-year average			8-year average		4-year average
Wheat	45·0	30·4	0 31	14 07	16 00	8 88	21 53
Oats, Banner	64·0	51·2	0 19	11 84	13 15	−0 32	7 30
Hay, sweet clover	1·60	1·85	6 25	10 00	8 72	2 80	8 88
Average for rotation						3 79	12 57
Six-year Rotation—							
Fallow				6 89			
Wheat, Garnet	53·0	34·3	0 33	17 53	14 31	9 50	
Wheat	23·0		0 62	14 18		−1 99	
Oats, greenfeed	0·88	0·90	11 11	9 78	10 63	−2 74	
Oats	42·0		0 26	11 08		−3 52	
Hay	1·60	0·99	6 25	10 00	6 39	2 80	
Average for rotation						0 68	
Demonstration Test Field—							
Grazier western rye for seed	21·4		0 50	10 62		16 38	

Another three-year rotation which includes wheat, oats and hay, is proving to be satisfactory here. It provides a cash crop of wheat on one-third of the land, a crop of oats in the second year and a crop of hay on the remainder of the land. The hay is removed early in July and the land ploughed immediately after, giving a partial fallow in that year. In districts where there is sufficient moisture each season to produce a crop, this rotation is a good one. At Meota this rotation stands out as the most profitable one in use. The profit for 1930 from this rotation was $3.79 per acre, and the two-year average was $5.29 as compared with $1.88 for 1930 and $3.51 for the two-year average of the rotation of fallow, wheat, wheat.

The six-year rotation in use here has some advantages, but is not an ideal one. The first three years run just the same as the three-year rotation of fallow, wheat and wheat, but instead of going back to fallow again, a fallow substitute is used. For a few years corn was given a trial and then sunflowers and oats in rows were tested. In the past two years, oats sown late for greenfeed were used. Corn does not do well at Meota, but the other two crops can be grown satisfactorily. In the fifth year either wheat or oats are used depending upon local requirements. This crop has not always yielded as high as fallow, but the cost is lower and the profit is as good. On account of cutworm damage in greenfeed and oats the profit is low this year, the average profit for the rotation being $0.68.

A field was sown to Grazier western rye grass in 1929, using Reward wheat as a nurse crop, and a good catch was obtained. This crop was cut with a binder and thrashed for seed, giving a yield of 300 pounds or 21·4 bushels of good seed per acre. This is a side line that should be developed more on clean farms. It is a profitable crop and good seed can only be grown on clean land.

A well attended field meeting was held on August 11. After an excursion through the fields where the work of the station was discussed by the supervisor, the visitors returned to the lawn where interesting addresses were delivered.

A pleasing feature of this meeting was an address and presentation to the operator by the Meota and district Board of Trade as a slight token of their appreciation. Mr. Tait, who has operated this station since 1918, is retiring this year on account of his advancing years. A resolution was passed by the visitors and forwarded to Ottawa, expressing their appreciation of the work done and asking that the Illustration Station remain in the district.

SPRUCE LAKE

Harry Eagle, Operator

Spruce Lake was one of the few places in Northern Saskatchewan where the precipitation for the summer was below normal. The total precipitation for the five growing months was 6·83 inches, whereas the six-year average for the same period has been 7·37 inches. The distribution of moisture was satisfactory and good crops were harvested.

The average yield of wheat from all fields was 38·3 bushels per acre, while Banner oats averaged 80 bushels per acre. Alfalfa yielded 1·20 tons per acre, but sweet clover and western rye grass seeded in 1929 failed and the fields were sown to oats for greenfeed, and gave an average of 2·12 tons of choice oat hay per acre.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT SPRUCE LAKE

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	2-year average	1930	1930	2-year average	1930	2-year average
			$	$	$	$	$
Three-year Rotation—							
Fallow				5 17			
Wheat, Garnet	38·5	25·0	0 34	13 24	12 94	6 40	7 31
Wheat, Garnet	34·0		0 36	12 18		5 16	
Average for rotation						3 86	
Three-year Rotation—							
Fallow				5 17			
Wheat, Reward	43·0	26·0	0 33	14 06	12 88	7 87	4 74
Wheat, Reward	29·0		0 42	12 05		2 74	
Average for rotation						3 54	
Four-year Rotation—							
Fallow				5 69			
Wheat, Garnet	41·5		0 33	13 68		6 49	
Oats, Banner	78·5		0 17	12 98		2 15	
Hay, oat green feed	1·75		6 11	10 70		3 30	
Average for rotation						2 99	
Three-year Rotation—							
Wheat, Garnet	44·0		0 26	11 38		12 16	
Oats, Banner	82·0		0 14	11 51		3 25	
Hay, oat green feed	2·50		4 61	11 53		8 67	
Average for rotation						8 03	
Demonstration Test Field—							
Alfalfa	1·20	1·10	4 60	5 52	6 38	4 08	3 42

This station was established in 1922. However, last season the work was reorganized, making it impossible to compile averages on our present cropping system beyond that period. Three rotations are now under test.

ST. PAUL

HECTOR THERRIEN, OPERATOR

Spring opened about the average date at this station. Seeding operations were begun on April 25. There was a fair supply of moisture in the soil and all crops started off well. The precipitation was above normal and a total of 11·53 inches of rain fell in five months. Of this, 5·79 inches fell in June and 3·05 inches in July. There was no frost or hail damage at this station and on August 25 the operator started to harvest a very heavy crop of grain.

There are four rotations illustrated at St. Paul. Two of these were begun when the station was first established in 1928, the other two were started this year.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT ST. PAUL, ALTA.

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	2-year average	1930	1930	2-year average	1930	2-year average
			$	$	$	$	$
Six-year Rotation—							
Fallow				6 33			
Wheat	42·0	30·1	0 36	15 18	14 59	5 82	7 28
Wheat	28·2	22·2	0 45	12 82	12 49	1 19	4 56
Oats seeded	58·8	46·0	0 19	10 96	10 63	−0 38	3 80
Hay or pasture	Nil	0·60		8 99	8 24	−8 99	−2 24
Hay or pasture	2·00	1·00	4 06	8 12	6 18	7 88	1 82
Average for rotation						0 92	2 54
Four-year Rotation—							
Fallow				6 33			
Wheat	42·0	29·2	0 36	15 11	14 20	5 89	6 40
Wheat	31·6	23·8	0 42	13 13	12 57	2 67	5 29
Oats	66·2	60·7	0 18	11 68	11 64	0 24	9 39
Average for rotation						2 20	5 27
Three-year Rotation—							
Fallow				6 33			
Wheat, Garnet	41·4		0 36	15 11		5 59	
Oats, Banner	71·6		0 21	14 92		−2 04	
Average for rotation						1 18	
Three-year Rotation—							
Fallow				6 33			
Wheat, Reward	40·0		0 38	15 00		5 00	
Barley, Trebi	71·0		0 22	15 60		−7 08	
Average for rotation						−0 69	

The six-year rotation includes a fallow, two crops of wheat, one of oats and two of hay. The hay field seeded down in 1929 was a failure and was fallowed. The cost of grass and clover seed was charged against the field in addition to the cost of fallowing, which shows a loss of $8.99 for 1930. If feed had been required, a crop of oats sown late for greenfeed would have added considerably to the returns and reduced the loss for this season. However, the land was fallowed and should tend to increase next year's returns. In spite of the loss on this field and the low price of grain, a profit of 92 cents per acre is shown for the rotation this year. This rotation is increasing in popularity in the northern districts, particularly where mixed farming is practised. It has an advantage in being well balanced and provides one-third of the land for the production of wheat as a cash crop, one-sixth for fallow, one-sixth for oats which can be used either as a cash crop or for feed, and one-third for hay. It distributes the labour over a longer season, and is exceptionally good from the standpoint of weed control.

The four-year rotation is a common one in the northern districts. For a time it may prove satisfactory. This is particularly true on new land if care is taken to keep the land clean. From the standpoint of weed control this rotation is unsatisfactory.

The two additional rotations established this year were used to test out Reward and Garnet wheat and for fertilizer trials. In one of these, fallow, wheat and oats constitutes the rotation, while in the other, fallow, wheat and barley are used. Neither rotation however, is recommended for general farm purposes. Garnet wheat yielded 41·4 bushels per acre compared with 40·0 for Reward. Both varieties ripened in 113 days.

Unfortunately no fertilizer drill was available at seeding time and the fertilizer was sown broadcast by hand on half of each field. Superphosphate was sown at the rate of 48 pounds per acre on one field and ammonium phosphate at 40 pounds per acre on the other field. There was no apparent difference in the crop in either field at harvest time and the grain was not divided for thrashing.

One hundred and fifty bushels of Garnet wheat and 2,000 bushels of Banner oats were sold for seed by this operator during the year.

TISDALE

G. A. McMurdo, Operator

This station did not commence spring work as early as stations farther south or west and little seeding was done in April. There was sufficient moisture in the soil to supply crop requirements throughout the season.

Hay crops were good. A demonstration test field of alfalfa yielded 2·50 tons of choice hay. The sweet clover was allowed to ripen and yielded 500 pounds of seed per acre.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT TISDALE

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	3-year average	1930	1930	3-year average	1930	3-year average
			$	$	$	$	$
Five-year Rotation—							
Fallow	.....	.....	.....	6 30	7 15	.....	.....
Wheat	25·0	30·9	0 57	14 30	16 74	−1 30	13 47
Hay (sweet clover seed)	500·0 lb.	*2·13	1 52	12 67	11 89	17 33	10 28
Wheat	33·0	36·5	0 37	12 27	14 79	4 89	20 02
Oats	52·0	41·2	0 21	11 14	12 54	−1 78	3 11
Average for rotation	.....	.....	.....	.....	.....	3 83	9 38
Demonstration Test Field—							
Alfalfa	2·50	2·10	2 66	6 66	8 36	13 34	10 98

*Two-year average only. Crop taken in seed.

There is only one rotation used at this station. This is one of five years' duration and consists of fallow, wheat seeded down, hay, wheat, and oats. This rotation differs from the five-year rotation on most of the other stations in that the hay crop is grown in the third year instead of the fifth. It appears to be satisfactory for the Tisdale district. Marquis wheat was grown after hay while Reward was grown after fallow, so that the difference in yield between these two fields may be due to either of two factors and are not comparable.

This operator maintains a pure bred herd of Holsteins and finds that sweet clover and alfalfa give satisfactory returns when fed to good dairy cattle. Brome grass is used on this farm for pasture.

WAINWRIGHT

GEO. C. BOYD, OPERATOR

The precipitation for the crop months was greater at Wainwright than at any other station supervised from Scott. Records show a total of 14·52 inches of rain for the five months ending August 31, 1930—just four times the total precipitation recorded for the same period last year.

Spring opened early and the fields on the Illustration Station were ready for cultivation in April, but the weather continued cold and growth was slow. Under such conditions, farmers were slow to start seeding. A few fields in the district were sown about April 10, and one field of wheat was sown on the Illustration Station the same date. Considerable harrowing had been done by this time. A period of cold, stormy weather set in and delayed further work on the land until about April 26 when seeding became general.

Grain crops yielded well, and hay seeded previous to 1929 gave good returns. Sweet clover seeded in 1929 did not survive the dry season of its first year and was a total failure.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT WAINWRIGHT, ALTA.

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton	Cost per acre		Profit or (−) loss per acre	
	1930	6-year average	1930	1930	6-year average	1930	6-year average
			$	$	$	$	$
Three-year Rotation—							
Hay and fallow	1·60	.....	4 69	7 50	.....	5 30	.....
Wheat	37·4	26·7	0 33	12 40	15 14	7 42	13 28
Wheat	33·8	23·7	0 36	12 04	14 43	5 87	9 90
Average for rotation	.....	.....	.....	.....	.....	6 20	.....
Four-year Rotation—							
Fallow	.....	.....	.....	6 57	.....	.....	.....
Wheat	27·1	.....	0 55	14 96	.....	−0 60	.....
Wheat	26·8	.....	0 47	12 70	.....	1 50	.....
Hay	1·80	.....	3 92	7 06	.....	7 34	.....
Average for rotation	.....	.....	.....	.....	.....	2 06	.....
Four-year Rotation—							
Fallow	.....	.....	.....	6 08	.....	.....	.....
Wheat	38·2	.....	0 41	15 59	.....	4 66	.....
Hay (oats in 1930)	71·0	.....	0 24	16 76	.....	−3 98	.....
Oats	73·0	.....	0 16	12 03	.....	1 11	.....
Average for rotation	.....	.....	.....	.....	.....	0 45	.....
Two-year Rotation—							
Sunflowers	6·00	4·55	1 66	9 97	13 14	14 03	6 91
Wheat	31·0	22·2	0 37	11 52	11 61	4 91	10 57
Average for rotation	.....	.....	.....	.....	.....	9 47	8 74
Demonstration Test Field—							
Alfalfa	2·60	1·29	2 89	7 52	7 38	13 28	6 46

Four rotations are in use at this station. Two of these have been in operation for a number of years, but the other two are new. The three-year rotation of fallow, wheat, wheat, is not used nearly so much in this district as farther east and south, and many farmers think that once in four years should be often enough to fallow. This rotation has shown a substantial profit at this station, and in view of the figures shown in the tables, it cannot be

condemned from a financial viewpoint. Some changes were made at this station and the rotations were moved to a new location, so that it is impossible to judge the effects on the soil.

Another rotation that has been in use at this station for a number of years, is one of sunflowers and wheat. This rotation appears to be very profitable but it cannot be considered as a satisfactory farm rotation because few farmers can profitably use more than a small acreage of sunflowers. This crop is given a value of $4 per ton dried, which is a fair price, but any crop is just what can be got out of it either in cash, feed, or as a soil builder. Sunflowers are not regarded as a soil improver. They have no market value, and the profit from the crop depends upon the ability of the grower to market the sunflowers through live stock. This crop gave a very heavy yield this year. The estimated yield, based on weight taken soon after cutting, was 10·80 tons per acre. The crop was stooked in squares and weights taken two months later placed the yield at 6·00 tons per acre. It will be noted that the yield of wheat after sunflowers is lower than after fallow, but the difference is not great enough to pay for the cost of fallow.

Six-ton crop of sunflowers on the Illustration Station at Wainwright, Alberta.

Two four-year rotations have been added to this station. In one respect, these rotations are alike inasmuch as the same crops are grown in both. The difference is the sequence of the last two crops. In one, the order is fallow, wheat, wheat or oats, hay, but in the other rotation the last two crops are reversed and hay is cut in the third year. These are both useful rotations and will be tested for a period of years.

Alfalfa sown in 1924 yielded 2·60 tons in two cuttings this year. The first cutting was made on August 2 when 1·80 tons per acre was taken off. A second cutting was taken off on September 26, when the yield was 0·80 tons. This field has produced an average of 1·29 tons per acre for the past six years.

REPORT OF THE ILLUSTRATION STATIONS IN SOUTHERN SASKATCHEWAN

E. C. Sackville, B.S.A., Supervisor

During the year 1930 sixteen Illustration Stations were supervised from the Experimental Station, Swift Current, Sask. Fourteen of these are located in the south part of the province and two in the east central. Two new stations were established and a start made with Illustration work this spring.

THE SEASON

In those districts served by the Illustration Stations in the south central part of Saskatchewan in 1930, on the whole the conditions were unfavourable for crop production. This was chiefly on account of the lack of an adequate supply of moisture. Following the dry season of 1929 there was little moisture carried over in the soil and during the growing season this year the rainfall was light. The spring was cool with some very strong winds. Considerable damage was caused by soil drifting on three of the stations. During the latter part of July the weather was very hot which hastened the ripening of all grain. There were a few stations in this area which received more rainfall than the others and were able to produce a fair crop of grain. Riverhurst was the most fortunate in this respect while Lisieux, Radville and Shaunavon had sufficient rain to produce little more than half the average wheat crop on fallowed land. Weyburn received a favourable rainfall, but the crop was seriously damaged by hail and rust. On all the other stations yields were quite low even on well fallowed land. In most places oats were not threshed and gave only a light crop of green feed. Hay crops were practically a failure over all this area. On most of the stations they failed to make a start in the spring. Those which did start made only a light growth. The stations in the southwest and east central parts of the province were favoured with more rainfall and crop yields were higher. Rust caused serious damage to the wheat in the east central region, but coarse grains escaped damage and gave heavy yields. Hay crops also yielded well here. In the southwest section, however, the hay crop was light.

PRECIPITATION AT ILLUSTRATION STATIONS IN SOUTHERN SASKATCHEWAN APRIL-OCTOBER INCLUSIVE

Station	April	May	June	July	Aug.	Sept.	Oct.	Total
	in.	in.	in.	in.	in.	in.	in.	in.
Avonlea	0·65	0·55	2·85	0·56	0·46	0·28	0·25	5·60
*Canora	.....	5·75	2·62	2·62	0·64	1·95	0·55	.....
Chaplin	1·95	1·00	2·41	0·55	2·37	0·90	0·63	9·81
Churchbridge	.....	2·50	2·80	3·76	.....	1·14	.....	.....
Davidson	0·79	0·79	0·97	2·83	0·26	2·10	0·82	8·56
Fox Valley	1·44	0·78	3·60	1·15	.....	1·50	0·63	.....
Herbert	1·04	0·31	2·19	0·98	1·00	1·20	0·33	9·84
Lisieux	2·04	0·62	3·74	1·05	0·90	2·01	1·14	11·50
Parkbeg	1·15	0·54	1·75	1·16	0·71	0·56	1·03	6·90
Piapot	2·41	0·48	4·08	1·15	0·32	0·37	0·37	9·18
Radville	1·02	1·56	2·54	0·53	0·61	0·28	0·89	7·43
Riverhurst	1·80	1·29	2·29	3·64	0·35	1·85	.....	.....
Shaunavon	0·80	0·12	1·45	1·63	0·59	1·50	0·24	6·33
Trossachs	1·22	2·12	2·77	0·75	0·53	0·43	0·47	8·29
Tugaske	1·34	1·20	1·99	1·42	0·40	1·11	0·57	8·03
Weyburn	0·63	1·76	3·63	3·25	0·92	0·22	1·29	11·70

*Rain gauge set up May 8.

MEETINGS

Field meetings and picnics were held during the summer at four stations, namely, Piapot, Shaunavon, Avonlea and Radville.

EXHIBITIONS

The Supervisor assisted in judging the grain and horticultural exhibits at the summer fairs held at Shaunavon, Maple Creek and Neville. He also assisted at the seed fairs held at Gull Lake, Morse and Swift Current.

FACTORS CONSIDERED WHEN MAKING UP PRODUCTION COST

In order to arrive at the cost of producing crops, the following charges were used, and in calculating profits, crops were given the following return values:—

COST VALUES

Rent of land, per acre	8 per cent interest on land value
Taxes	At rates charged
Use of machinery, per acre	$1.35
Horse labour	8 cents per hour
Manual labour	Rates prevailing in the district
Threshing	Rates prevailing in the district
Binder twine	Rates prevailing in the district

COST OF SEED

Wheat, per bushel	$ 1 00
Oats, per bushel	0 50
Barley, per bushel	0 50
Rye, per bushel	0 80
Corn, per pound	0 06
Sweet clover, per pound	0 12
Western rye grass, per pound	0 10
Brome grass, per pound	0 18
Alfalfa, per pound	0 40

RETURN VALUES

Wheat, per bushel, basis No. 1 Northern	$ 0 60
Oats, per bushel	0 25
Barley, per bushel	0 20
Rye, per bushel	0 25
Hay, per ton	10 00
Oat sheaf feed, per ton	10 00
Corn and sunflower silage, per ton	3 00
Corn, fodder, per ton	6 00

Two-thirds of the cost of summer-fallowing is charged to the first crop and one-third to the second crop. The yields given for hay and fodder crops are estimated weights. The figures in the cost of production and profit or loss columns are all calculated to the nearest cent.

AVONLEA

OPERATOR, J. W. MILLER

Spring opened in good time in this district and first seeding on the station was done April 18. The weather during the early part of the season was dry and cool. June gave a fair amount of rain and crops made good growth for a time, but it was dry during July with extreme heat. The rainfall from spring until the end of July was 4·61 inches. Yields of grain were low and hay crops failed to make a stand. The quality of the grain, however, was satisfactory. Harvest was early. Cutting of wheat began August 2.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT AVONLEA

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (—) loss per acre	
	1930	Average 7 years		1930	Average 7 years	1930	Average 7 years
			$	$	$	$	$
Six-year Rotation—							
Fallow (oats on fallow 1930)	14·0	.....	0 89	12 48	.....	−8 98	.....
Wheat, Marquis	13·0	15·7	1 05	13 66	14 52	−5 86	2 76
*Wheat (barley 1930)	3·3	8·2	3 17	10 47	11 74	−8 49	2 74
†Corn, Northwestern Dent	0·5	3·4	22 36	11 18	11 42	−8 18	−1 13
Wheat, Marquis	8·0	11·3	0 99	7 93	9 49	−3 13	2 94
†Hay, western rye (oats 1930)	0·1	0·8	69 00	6 90	5 93	−5 90	2 73
Sweet clover (oats 1930)	0·1	1·55	69 00	6 90	7 03	−5 90	9 36
Profit or loss for rotation	.....	.....	.....	.....	.....	−6 72	.....
Three-year Rotation—							
Fallow	.....	.....	.....	7 23	7 24	.....	.....
Wheat, Marquis	7·0	15·0	1 86	12 99	14 32	−8 79	3 40
Wheat, Marquis	4·0	9·3	2 71	10 84	13 01	−8 44	−2 79
Profit or loss for rotation	.....	.....	.....	.....	.....	−5 74	0 30
Demonstration Test Fields—							
Brome and sweet clover	‡	1·5	.....	5 90	.....	.....	.....
Western rye and alfalfa	‡	.....	.....	5 90	.....	.....	.....

*Four-year average for wheat. †Six-year average for corn and hay.

The phosphate fertilizers advanced the growth of the barley crop on the station quite noticeably. The fertilized part was practically all headed out while some of the crop on the unfertilized area was unable to reach that stage. The yield was also increased. The results with wheat were not so noticeable.

A field meeting was held on this station the afternoon of July 24. There were quite a number of farmers present and considerable interest shown in the work.

CANORA

Operator, Chris. Hoehn

Illustration work was started in the district this past spring on the farm of Mr. Hoehn two miles north of the town. The land which was selected lies adjacent to the main highway running north and south. The soil is a black loam typical of that in the district and had been summer-fallowed the previous year.

The spring was late and cool and the first seeding of wheat was done May 12, barley May 22 and oats May 23. There was plenty of moisture at the time of seeding and sufficient during the growing season to promote favourable growth of all crops. A rain gauge was set up on May 8 and recorded 5·75 inches during the remainder of the month. During June and July there were 5·24 inches. Rust infection developed in the wheat crop soon after it had headed out and caused serious damage reducing both yield and grade. Oats and barley, however, were not affected to any extent and came through with high yields of good quality grain. Reward and Garnet wheat were harvested August 19, Marquis August 25, barley August 20 and oats August 25.

The general plan of work which is intended to be carried on at this station is as follows:—

1. Testing of a few of the most promising varieties of wheat and other grains.

2. Testing of different systems of cropping which will include the use of hay and pasture crops.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT CANORA

Rotations and crops	Yield per acre 1930	Cost per bushel, 1930	Cost per acre, 1930	Profit or (−) loss per acre, 1930
	bush.	$	$	$
Wheat, Marquis	16·5	0 88	14 58	−7 49
Wheat, Reward	16·0	0 90	14 43	−6 43
Wheat, Garnet	14·0	1 01	14 15	−8 13
Oats, Banner	75·0	0 22	16 39	2 36
Barley, O.A.C. 21	37·0	0 39	14 60	−7 20
Barley, Trebi	48·0	0 32	15 51	−5 91

This year a test was made of three varieties of wheat, Reward, Garnet and Marquis, two varieties of barley, Trebi and O.A.C. 21 and one variety of oats, Banner. The results of these tests are given in the table above. In regard to wheat, it will be observed that Reward gave the best results this year. It came through the rust with much less damage than either Garnet or Marquis. Marquis made a heavy growth but rusted badly and yielded 16·5 bushels of feed wheat per acre. Garnet made 14·0 bushels of feed wheat, while Reward made 16·0 bushels of No. 4 grade. Further tests will be made of these wheats. Trebi barley gave a heavier yield than O.A.C. 21 and did not lose so much in harvesting by heads breaking off as did the O.A.C. 21 variety.

A field of barley on the Illustration Station at Avonlea, Sask. Right, fertilized with superphosphate; left, unfertilized.

Two fields were seeded down to hay this year. One was sown with a mixture of western rye grass and alfalfa, eight pounds of each per acre and the other with a mixture of western rye and Arctic sweet clover, eight pounds each. These were sown along with the grain crop and made a good growth. There was a strong even stand in the stubble this fall after the grain was cut. The seed grain which was used for sowing the station fields this spring was supplied by an Experimental Farm.

CHAPLIN

OPERATOR, W. W. LOCKWOOD

An illustration station was established in this district last spring and a beginning made with the work. The land selected for this purpose was a field on the farm of Mr. W. W. Lockwood located on section 36, township 17, range 6, west of the 3rd meridian, three miles west of the town of Chaplin. A good deal of the work this year was of a preparatory nature. Four fields were summer-fallowed and three others seeded down with hay crops. One field was sown to wheat, one to oats and two to barley. These crops were blown out before they could become established. Some of the fields were reseeded with oats, but these were badly damaged also and gave only a small quantity of green feed.

Fall rye was sown on two fields this autumn. Fall rye was the only crop which came through the year with success. The season was very unfavourable for crop production in this locality. Winds were so strong and continued so long that drifting of the soil was disastrous to spring sown crops. In addition to the winds the rainfall during the growing season was light, particularly during the month of May. A rain gauge was set up on the station this spring. The total rainfall recorded for the season was 9·81 inches.

CHURCHBRIDGE

OPERATOR, HENRY GRUBE

Spring opened in good time in this district and seeding of wheat on the station was started April 22. Oats were sown May 2 and barley May 24. The weather early in the spring was dry and cool, but there was sufficient moisture during the growing season to promote favourable growth. Continued moist weather during July favoured the development of rust which did considerable damage to the wheat crop, reducing it both in yield and grade. Oats, barley and hay crops came through with good yields, but corn was a lighter crop than usual. Hay was cut July 27 and harvesting of Reward wheat commenced August 9.

Two varieties of wheat were grown, Reward and Marquis; Reward both on fallow and after a hay crop and Marquis after a hay crop only, the land for the latter broken soon after the hay was taken off last year. The heavy infestion of rust which set in at the time the grain was filling affected all the wheat, but the Reward came through with a much better quality and yield than the Marquis. As will be seen from the results shown in the table above, Reward yielded 15 bushels per acre on one field and 14 on another, grading No. 4, while Marquis yielded 9 bushels of feed wheat. There is not much Marquis grown in this district now since the introduction of the earlier wheats. Garnet was introduced on this station in 1926 and Reward in 1928. As was seen by results in the table above Garnet gave good yields during the four years it was grown, but on account of it being more susceptible to rust damage than Reward, it cannot be considered as safe a wheat for this district. However, on account of its earliness it is often able to avoid rust damage to quite an extent.

Each year the operator of this station has sold a good many bushels of seed wheat of these newer varieties. In this way they have been introduced on a good many farms in the district. During the past year the following amounts were sold: Reward wheat—150 bushels; Garnet—200 bushels. In

addition to this 500 bushels of Banner oats were sold for seed. Hay crops have done well on this station, as the district is well adapted to growing hay. The mixture of western rye and alfalfa makes an excellent quality of hay. Sweet clover has also furnished a lot of good feed. The operator carries a good sized herd of milk cows as well as some young stock, so is in a position to utilize the feed crops profitably.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT CHURCHBRIDGE

Rotations or crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 6 years		1930	Average 6 years	1930	Average 6 years
			$	$	$	$	$
Six-year Rotation—							
*Fallow				7 91			
†Wheat, Reward	15·0	24·2	1 05	15 70	13 47	−7 45	14 64
Hay, western rye and alfalfa	1·75	2·2	6 09	10 65	9 27	6 85	14 30
Hay and break	1·5	1·8	4 77	7 15	8 30	7 85	10 45
‡Wheat, Marquis 1930	9·0	15·3	0 93	8 34	11 76	−4 56	6 00
Oats, Banner	65·0	50·8	0 19	12 37	12 67	3 88	8 45
Profit or loss for rotation						1 04	
Four-year Rotation—		Average 2 years			Average 2 years		Average 2 years
Wheat, Reward	14·0	15·2	0 73	10 21	11 62	−4 39	2 02
Corn, Northwestern Dent	3·0	4·62	5 30	15 90	15 78	−6 90	1 49
Barley, O.A.C. 21	30·0	25·0	0 35	10 39	10 49	−4 39	−1 51
Hay, sweet clover	2·0	1·5	4 02	8 04	7 54	11 96	8 45
Profit or loss for rotation						−0 53	2 81

*Corn was used in this rotation instead of fallow previous to 1929.
†Reward 1929 to 1930, Garnet previously.
‡Reward 1929, Marquis other years.

An excellent flock of Rhode Island Red poultry has been established on this station from foundation stock obtained from Morden Experimental Station. The birds are of good size and strong constitution. Last spring 15 cockerels and 20 settings of hatching eggs were sold to farmers in the district to help in building up their flocks.

DAVIDSON

OPERATOR, REUBEN LLOYD

Seeding started on this station May 6. The spring was cool and windy and the rainfall was light every month of the growing season excepting July. These heavier July rains came too late to help the crops to any extent and during the month there was also a hail storm which did considerable damage to all crops. With serious damage from both drought and hail, crops were practically a failure. One field of wheat was threshed and from the others a small quantity of feed was gathered. Hay failed to show any green growth in the spring and oats were substituted. Total rainfall during the growing season was 5·38 inches which was more than last year by nearly two inches, yet crops were much lighter than in 1929. Harvest was started August 16.

The alfalfa field was broken up this year, as the stand had become thin. During the four years since 1926 the average yield of hay on this field has been $\frac{3}{4}$ of a ton per acre, giving an average profit of $1.29 per acre. The value of hay

in this calculation has been estimated at $10 per ton. After alfalfa is seeded the cost of production in future years is low. Barley has proven a good cleaning crop on this station where there is considerable French weed and mustard. It has also given fairly good yields except the last two years when conditions have been unfavourable.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT DAVIDSON

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 4 years		1930	Average 4 years	1930	Average 4 years
			$	$	$	$	$
Six-year Rotation—							
Fallow	.....	.....	.....	6 31	6 67	.....	.....
Wheat	0·2 hay	18·5	.....	11 07	14 11	−9 07	1 99
Barley	0·2 hay	.....	.....	8 80	.....	−6 80	.....
Sweet clover and fallow (clover ploughed in)	.....	.....	.....	7 38	.....	−1 44	.....
Wheat (oats 1930)	0·2 hay	18·0	46 55	9 31	11 27	−7 31	8 12
Hay, Sweet clover and western rye (oats reseeded 1930)	0·2 hay	0·46	46 55	10 71	7 28	−7 31	−1 40
Three-year Rotation—							
Fallow	.....	.....	.....	6 31	6 73	.....	.....
Wheat	3·2	13·0	3 72	11 92	14 23	−10·00	3 06
*Barley	0·2 hay	29·3	.....	8 80	13 12	−6 80	5 41
Demonstration Test Fields—							
Alfalfa, Grimm (broken up)	.....	0·75	.....	6 94	7 03	.....	1 29

All crops damaged by hail in addition to the drought. No grain threshed except wheat in the three-year rotation, balance used for hay.
*Three-year average.

Seed sales from this station during the year were Marquis wheat 300 bushels, Early Ohio potatoes 10 bushels. Sales of poultry stock for breeding purposes amounted to 10 cockerels and 20 settings of Barred Rock hatching eggs.

FOX VALLEY

Operator, Chris. Mutschler

Spring opened in this district about the average date and the first seeding was done on the station April 17. The spring was fairly dry and cool with considerable wind. There was no noticeable damage to the crops on the four-acre fields of the station, but on the larger fields where the summer-fallow demonstrations are carried out the movement of soil gave the crop a setback. During the growing season there were nearly seven inches of rain which was sufficient to produce a good crop. This rain was not distributed favourably and furthermore subsoil moisture was below normal. Most of the rain mentioned came in June while the other months were low in precipitation. The grain crops came through with good yields in most cases, but hay failed to make a stand and corn was a light crop. Harvesting was done with the header and cutting was started August 5.

The two-year plan of cropping in which only one crop of wheat is grown and then the land summer-fallowed gave the most profit this year. It has also given

the most profit over a period of three years. The next best system has been the three-year rotation where two crops of wheat are taken off before summer-fallowing the land. By referring to the table above it will be observed that most of the crops show some loss this year chiefly on account of the low prices of grain. The only crops which do show a profit are the two wheat fields which gave a yield of over 20 bushels per acre. Hannchen barley following a crop of corn gave 29 bushels per acre which was a good yield for this season.

The operator made the following sales of seed grain in his district during the year, namely, Marquis wheat 450 bushels, Banner oats 50 bushels.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT FOX VALLEY

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 3 years		1930	Average 3 years	1930	Average 3 years
			$	$	$	$	$
Wheat continuously	4·1	10·3	1 97	8 08	9 41	−5 62	1 06
Two-Year Rotations—							
Fallow				6 58	6 33		
Wheat—Marquis	28·0	25·8	0 48	13 44	15 66	3 36	7 02
Profit or loss for rotation						1 68	3 51
Fallow				6 58	6 33		
Oats—Banner	38·5	45·6	0 39	15 01	16 34	−5 39	1 10
Profit or loss for rotation						−2 69	0 55
Fallow				6 58	6 33		
Fall rye—Dakold	19·3	14·4	0 71	13 64	14 23	−8 82	−5 95
Profit or loss for rotation						−4 41	−2 97
Seven-Year Rotation—							
Wheat seeded down	12·7	20·4	0 93	11 87	12 26	−4 25	7 09
*Hay—western rye and sweet clover	0·75	1·08	13 05	9 79	9 31	−2 29	3 19
Corn—Northwestern Dent	0·5	1·17	27 64	13 82	11 48	−10 82	−4 62
Wheat—Marquis	10·0	19·8	0 77	7 71	9 47	−1 71	10 19
Fallow				6 58	6 33		
†Fall rye—Dakold	18·0	13·0	0 75	13 54	13 40	−9 04	−4 50
Fallow				6 58	6 49		
Profit or loss for rotation						−4 01	1 62
Six-Year Rotation—							
Barley—Hannchen	29·0	27·1	0 29	8 37	9 24	−2 57	0 34
*Hay—sweet clover	0·5	0·9	14 64	7 32	8 03	−2 32	1 79
Fallow				6 58	6 33		
Wheat—Marquis	25·0	26·5	0 54	13 46	14 84	1 54	8 88
Spring rye—Prolific	7·0	17·6	1 45	10 15	8 45	−8 40	1 37
Corn—Northwestern Dent	0·5	0·91	27 64	13 82	10 75	−10 82	−4 93
Profit or loss for rotation						−4 27	1 24
Three-year Rotation—							
Fallow				6 58	6 78		
Wheat—Marquis	19·0	22·7	0 67	12 81	14 08	−1 41	7 60
Wheat—Marquis	12·6	11·5	0 88	11 10	11 58	−3 54	−0 99
Profit or loss for rotation						−1 65	2 20
Demonstration Test Fields—							
Alfalfa—Grimm	Broken up	0·87		7 15	6 12		4 07

* Hay failed in both of these rotations in 1930. Oats for green feed were reseeded in the seven-year rotation and millet in the six-year rotation.

† Fall rye winterkilled in 1928 and oats for green feed were substituted. The alfalfa hay failed after being down two years and was broken up this year.

RESULTS OF SUMMER-FALLOW EXPERIMENTS IN A TWO-YEAR ROTATION OF WHEAT FALLOW ON LARGE FIELDS (19 ACRES)

Rotations, crops and cultural work	Yield per acre		Cost per bushel	Cost per acre		Profit or (−) loss per acre	
	1930	Average 2 years	1930	1930	Average 2 years	1930	Average 2 years
			$	$	$	$	$
Wheat after fallow—surface worked only	18·5	17·1	0 76	14 12	14 98	−3 02	0 77
Wheat after fallow—surface worked until July 20, then ploughed	19·0	17·0	0 79	15 08	15 41	−3 68	0 03
Wheat after fallow—ploughed early and surface worked (standard method)	19·4	17·4	0 79	15 33	15 57	−3 69	0 32
*Wheat after fallow—ploughed the previous fall, surface worked next year	19·4	.....	0 79	15 33	.....	−3 69	.....
Fallow surface worked only (not ploughed)	.....	.....	.....	5 08	5 47	.....	.....
Fallow surface worked until July 20 then ploughed	.....	.....	.....	5 84	6 31	.....	.....
Fallow ploughed early and surface worked	.....	.....	.....	6 32	6 65	.....	.....
Fallow ploughed the previous fall and surface worked the next year	.....	.....	.....	6 48	.....	.....	.....

* This field was fallowed by the standard method last year.

NOTE.—There is practically no difference in yields from the different treatments. The surface worked fallow shows a little more profit.

HERBERT

OPERATOR, MILTON HOLMES

The first seeding was done on this station May 1. Owing to the dry season of 1929 there was very little moisture carried over in the subsoil, even on land which had been summer-fallowed. The spring of 1930 was dry, cool and windy and during the whole growing season the rainfall was light. Soil drifting caused serious damage on this station. A large area at the north end of all fields except two was blown out completely after the grain had come up. These were reseeded later, but never made much growth owing to the drought and could only be used for pasture this fall. Hay crops failed to make a stand. Harvesting of wheat was started August 4.

Wheat on fallow in the six-year rotation where a hay crop is grown the year previous to the fallow was the only unprotected field which did not suffer serious damage from soil drifting This field practically all came through safely. This is the first year that soil drifting has caused serious damage on this station. The conditions under which this damage occurred may be stated as follows: (1) Frequent harrowing as the fields were harrowed both before and after sowing. (2) A dry condition of the soil. (3) Very strong continuous winds. It should also be pointed out that the drifting started on the lightest land which was on the west side of the station and spread from that point with a northwest wind. Wheat after alfalfa was a complete failure. The alfalfa had been down for eight years and evidently had exhausted the moisture out of the soil. Half of the alfalfa field was summer-fallowed and will be seeded to wheat in 1931.

Seed sales for the year amounted to 200 bushels of Marquis wheat. Poultry breeding stock to the extent of 40 settings of eggs and 10 cockerels of the Barred Rock breed were sold to farmers in the district.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT HERBERT

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 8 years		1930	Average 8 years	1930	Average 8 years
			$	$	$	$	$
Three-year Rotation—							
Fallow				6 99	7 80		
Wheat	5·2	15·8	2 28	11 85	15 39	−8 73	1 07
*Wheat	4·0	8·3	2 59	10 38	12 16	−7 98	−3 29
Profit or loss for rotation						−5 57	
Six-year Rotation—							
Fallow				6 99	7 93		
*Wheat	7·2	16·1	1 72	12 36	15 24	−7 94	0 31
Barley	6·0		1 71	10 28		−9 08	
Hay and fallow				8 19		−1 20	
*Wheat (oats, 1930.)	0·3	14·6	43 20	12 96	10 29	−9 96	3 88
Hay (oats reseeded)	Failure			8 20		−8 20	
Profit or loss for rotation						−6 06	
Two-year Rotation—							
†Fallow				6 99	7 92		
†Wheat	4·0	14·2	3 51	14 04	16 31	−11 64	−1 70
Profit or loss for rotation						−5 82	
Demonstration Test Fields—							
Wheat—after alfalfa	Failure			6 22		−6 22	

* Seven-year average. † Six-year average.

LISIEUX

Operator, Omer Prefontaine

Seeding of wheat on this station was started April 30. Barley and oats were sown May 17. Early in the spring there was a fair supply of moisture and the weather was cool for some time with strong winds. Some damage to the grain was caused by soil drifting. During May the weather was unusually dry, but in the month of June and early part of July there was sufficient rain for favourable growth. Later in July, however, it was very dry with extreme heat. The result was that the grain ripened too quickly and yields were only fair and did not prove up to early expectations. The quality of all the grain was good. Hay crops which were seeded last year, failed to make a stand and other crops had to be substituted. Harvesting started August 13 when the first wheat was cut.

All the grain crops were sown on fallowed land this year, as this is the first year the rotations have been under way. A test was made of growing wheat on land which had been summer-fallowed by two different methods: (1) Ploughed and surface worked in the ordinary way (2) Surface worked only using the one way disk and cultivator. It will be observed that there was only a slight difference in yield of grain following the different treatments. This experiment will need to be carried on for a number of years in order to obtain definite information on this point.

In addition to the regular hay fields which occur in the regular rotations, four permanent hay fields were seeded down last spring. These failed to make a stand and were reseeded this year with a light nurse crop of oats.

Phosphate fertilizers were used on this station this year. The results of this work are given at the beginning of this section of the report. The seed grain used on the station fields is supplied originally from one of the Experimental Farms. All the grain grown in these fields except what is required for seed

purposes on the farm is offered for sale to any farmer in the district at a reasonable price. This spring the operator sold 50 bushels of Marquis wheat for seed to other farmers in the district.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT LISIEUX

Rotations and crops	Yield per acre bushels or tons 1930	Cost per bushel or ton 1930	Cost per acre 1930	Profit or (−) loss per acre 1930
		$	$	$
Three-year Rotation—				
Fallows: ploughed and surface worked	.....	.....	7 00	.....
Surface worked only	.....	.....	5 90	.....
Wheat on fallow:				
Ploughed and surface worked	15·7	0 84	13 23	−3 81
Surface worked only	14·0	0 88	12 32	−3 92
Wheat (on fallow this year)	15·7	0 84	13 23	−3 81
Profit or loss for rotation	.....	.....	.....	−2 56
Two-year Rotations—				
Fallow	.....	.....	7 00	.....
*Wheat—Marquis	10·0	1 49	14 92	−8 92
Profit or loss for rotation	.....	.....	.....	−4 46
Fallow	.....	.....	7 00	.....
*Oats—Banner	12·0	1 21	14 57	−11 57
Profit or loss for rotation	.....	.....	.....	−5 78
Fallow	.....	.....	7 00	.....
*Barley—Hannchen	8·5	1 67	14 23	−12 53
Profit or loss for rotation	.....	.....	.....	−6 26
Four-year rotation—				
Fallow	.....	.....	7 00	.....
Wheat—Marquis	16·5	0·80	13 23	−3 33
Oats (on fallow this year)	29·0	0 37	10 79	−3 54
†Hay (oats for hay reseeded)	1·0	9 05	9 05	0 95
Profit or loss for rotation	.....	.....	.....	−1 48
Three-year Rotation—				
Wheat—Marquis	16·0	0 83	13 26	−3 66
Barley—Hannchen	16·7	0 75	12 51	−9 17
†Hay—Millet reseeded	1·0	9 20	9 20	0 80
Profit or loss for rotation	.....	.....	.....	−4 01
Demonstration Test Fields—				
Oats seeded with western rye and alfalfa	0·5	17 10	8 55	−3 55
Oats seeded with alfalfa	0·5	17 10	8 55	−3 55
Oats seeded with western rye	0·5	17 10	8 55	−3 55
Oats seeded with brome	0·5	17 10	8 55	−3 55

* These crops were damaged by wind.
† The hay mixture of Western Rye and Sweet Clover failed in both rotations this year and oats and millet were substituted.

PARKBEG

Operator, T. L. Humphrey

Seeding of wheat started on this station April 23. There was a fair rainfall during April, but it turned dry later, with low temperatures and strong winds. During the summer the rainfall was fairly light being mainly showers with no soaking rains. There was not much subsoil moisture carried over from 1929 even in the fallows, and very hot weather set in the latter part of July which ripened the grain very fast. Harvesting of grain started August 4. Although there was more rainfall than last year, during the growing season crops were lighter.

In the original cropping plan for the season it was proposed to change the five-year rotation by substituting sweet clover for corn. However, it failed to make a stand and the land was fallowed. Corn has not proven a profitable crop on this station during the five-year period preceding 1930. Good stands

were obtained for the first three years, but it failed three succeeding years. Sweet clover has given a higher average yield of feed with less labour to produce. Comparing the different rotations which have been carried on at this station for the past six years, the highest yield of wheat has been obtained in the two-year rotation of wheat, fallow. However, the average net profit has been greater in the three-year rotation of wheat, hay and fallow. A valuation of $10 per ton has been placed on the hay. However, hay cannot be considered as a cash crop at this price, so it would be necessary to market it through the medium of livestock in order to realize the profit shown. This season all crops in the different rotations were produced at a loss, owing to the combination of low yields and prices. It will be noted that the two-year rotation shows the smallest loss under these conditions.

SUMMARY OF YIELDS, COST AND PROFIT OR LOSS AT PARKBEG

Rotations and crops	Yield per acre bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 6 years		1930	Average 6 years	1930	Average 6 years
			$	$	$	$	$
Three-year Rotation—							
Fallow	.....	.....	.....	7 62	7 08	.....	.....
Wheat—Marquis	3·0	16·8	3 76	11 27	11 77	−9 47	7 24
*Hay—western rye and sweet clover	Failure	0·87	.....	9 41	7 44	−9 41	−0 44
Profit or loss for rotation	.....	.....	.....	.....	.....	−6 29	2 27
Five-year Rotation—							
Fallow	.....	.....	.....	6 61	7 02	.....	.....
Wheat—Marquis	3·5	16·9	3 23	11 32	14 05	−9 22	5 51
Corn (hay and fallow, 1930)	Hay failed	0·8	.....	8 05	9 65	−1 44	−5 82
Wheat	7·0	15·3	1 68	11 30	9 68	−7 60	7 50
*Hay—western rye	0·2	0·85	33 55	6 71	5 87	−4 71	2 96
Sweet clover	0·2	1·5	33 55	6 71	5 31	−4 71	3 62
Profit or loss for rotation	.....	.....	.....	.....	.....	−5 54	2 75
Two-year Rotation—							
Fallow	.....	.....	.....	6 61	7 20	.....	.....
Wheat—Marquis	9·0	19·0	1 66	14 94	15 02	−9 54	6 42
Profit or loss for rotation	.....	.....	.....	.....	.....	−4 77	3 21
Two-year Rotation—							
†Wheat—Marquis	2·2	10·6	3 64	8 01	9 44	−6 69	1 77
†Hay—Sweet clover	Failure	1·4	.....	8 05	8 43	−1 44	9 05
Profit or loss for rotation	.....	.....	.....	.....	.....	−4 06	5 41
Demonstration Test Fields—							
Brome	Growth short, used for pasture			2 40		.....	.....

* Hay failed in both rotations this year. A mixture of millet and oats was reseeded in the three-year rotation, but growth was too short to cut. Oats were reseeded in the five-year rotation and gave a very light crop of green feed.

† Five-year average.

PIAPOT

Operator, E. Scherck

Spring opened in good time and seeding of wheat was started on the station April 18 and oats May 3. Although the weather was rather dry and windy in May, there was a favourable supply of moisture during the growing season and all crops made good growth except the hay which was below the average. Total rainfall from the beginning of spring until August 1 was 8·5 inches. Grain crops gave good yields and were of high quality. Harvesting of fall rye started July 22 and wheat August 1.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT PIAPOT

Rotations and crops	Yield per acre bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 3 years		1930	Average 3 years	1930	Average 3 years
			$	$	$	$	$
Three-year Rotation—							
Fallow	.....	.....	.....	5 64	6 09	.....	.....
Wheat—Marquis	31·5	28·3	0 41	13 04	12 86	5 86	12 04
*Wheat—Marquis	19·0	19 8	0 52	9 87	9 23	1 53	9 46
Profit or loss for rotation	.....	.....	.....	.....	.....	2 46	.....
Fallow	.....	.....	.....	5 64	6 09	.....	.....
Wheat—Marquis	31·5	28·3	0 41	13 04	12 86	5 86	12 04
Fall rye—Dakold	17·5	14·9	0 49	8 49	8 68	−4 12	0 41
Profit or loss for rotation	.....	.....	.....	.....	.....	0 58	4 15
Six-year Rotation—							
†Corn—North western Dent and North Dakota White Flint	2·2	.....	6 20	13 65	7 52	−0 45	−3 05
Wheat—Marquis	24·5	20·7	0 34	8 44	8 21	6 26	10 52
Hay—western rye and sweet clover	1·0	1·6	6 19	6 19	7 08	3 81	12 93
Wheat—Marquis	23·0	22·3	0 35	8 01	8 47	5 79	12 16
Fallow	.....	.....	.....	5 26	5 45	.....	.....
Fall rye—Dakold	28·0	28·1	0 40	11 25	12 03	−4 25	6 33
Profit or loss for rotation	.....	.....	.....	.....	.....	1 86	6 48
Two-year Rotation—							
Fallow	.....	.....	.....	4 95	5 51	.....	.....
Oats—Banner	70·0	52·3	0 23	15 78	13 07	1 72	6 51
Profit or loss for rotation	.....	.....	.....	.....	.....	0 86	3 25
Demonstration Test Fields—							
Brome	0·5	1·6	8 96	4 48	5 43	0 52	10 40
Western rye	1·0	1·8	4 96	4 96	6 18	5 04	14 65
Alfalfa—Grimm	0·5	1·8	9 28	4 64	5 18	0 36	15 66

* Two-year average.
† In 1928 the corn was damaged by frost and used for pasture. In 1929 it was hogged off.

The rotation which proved the most profitable this year was the three-year system, including two crops of wheat and a fallow. The net profit from this rotation was $2.46 per acre. The return value allowed for wheat was 60 cents per bushel. The highest yield of wheat 31½ bushels per acre was also obtained in this rotation on the fallowed land. The three-year rotation where fall rye is the second crop instead of wheat has not proven as profitable over a period of three years as the two crops of wheat. All crops show a profit this year except the fall rye and corn. Although the yield of rye was well up to the average, yet at the low prevailing price it did not pay for the cost of producing it. Winter wheat gave good results on this farm this year. A field of 20 acres which was sown in the stubble in the fall of 1929 yielded 18 bushels of good quality grain. Seed from this crop was sown on both stubble and fallow land this fall on the station fields. Several farmers in the district purchased seed of this winter wheat and are giving it a trial.

A field meeting was held on this station on the afternoon of July 17 which was attended by a goodly number of interested farmers.

RADVILLE

OPERATOR, J. H. STOCKTON

Spring opened in good time in this district and seeding of wheat was started April 12. The moisture condition appeared fairly good at this time, though the weather was cool and growth slow at first. The rainfall during the growing period was over 5·5 inches. This moisture was well distributed until the early

part of July, but after that the weather was dry and hot. Following the dry season of 1929 there was little carry over of moisture in the soil and crops suffered from drought the latter part of this season. All crops which were sown on fallowed land came through with fair yields, but stubble land crops were light.

Early in the spring it was quite evident that the hay crops would not make a stand and substitute crops had to be seeded. Harvesting was done with the combine and a start was made on the Reward wheat August 7 when the grain was quite hard.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT RADVILLE

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 7 years		1930	Average 7 years	1930	Average 7 years
			$	$	$	$	$
Six-year Rotation—							
Fallow	.....	.....	.....	6 92	7 45	.....	.....
Wheat (Reward 1930)	17·5	22·0	0 75	13 22	14 21	−2 72	9 82
Oats—Victory	12·0	25·4	0 96	11 55	13 54	−8 55	−1 86
Hay and fallow—millet reseeded 1930	Failure	.....	.....	7 33	.....	−7 33	.....
Wheat seeded down	14·3	13·7	0 94	13 44	11 26	−4 86	5 96
*Hay—western rye and alfalfa (oats reseeded 1930)	7·5	0·76	1 91	14 30	7 55	−12 43	0 54
Hay—Sweet clover (oats reseeded 1930)	7·5	1·52	1 91	14 30	7 68	−12 43	8 99
Profit or loss for rotation	.....	.....	.....	.....	.....	−6 90	.....
Three-year Rotation—							
Fallow	.....	.....	.....	6 92	6 86	.....	.....
Wheat—Marquis	22·6	23·3	0 59	13 44	15 13	0 12	10 80
Wheat—Marquis	5·0	11·1	2 32	11 60	12 20	−8 60	0 68
Profit or loss for rotation	.....	.....	.....	.....	.....	−2 83	3 83
Two-year Rotation—							
†Wheat—Reward 1930	16·0	13·3	1 02	16 39	13 18	−6 79	−2 52
†Sweet clover and fallow	Hay failed	0·5	.....	8 36	8 34	0 00	2 30
Profit or loss for rotation	.....	.....	.....	.....	.....	−3 39	−0 11

* Six-year average. Hay failed 1930.
† Three-year average. Reward wheat grown 1930, Marquis previously.

Reward wheat was grown on the station. This wheat was of excellent quality, ripened about a week ahead of the Marquis, but did not yield so well.

One change was made in the six-year rotation this year. Corn was replaced by sweet clover which was seeded last year with a grain crop. When it failed to make a stand, Hungarian millet was substituted. This made only a short growth which was pastured off and the land ploughed. Corn has not proven a profitable crop on this station. In only one year out of five has it been grown at a profit. Sweet clover has given better results from the standpoint of a feed crop.

The poultry flock of White Wyandottes has proven quite profitable. Sales of breeding stock for the year were 20 pullets and 3 cockerels.

A field meeting and picnic was held on this station on the afternoon of July 25. This was a joint meeting and picnic with the local United Farmers, and proved very successful. A tour was made of the illustration fields, and also of the experimental plots, where special work is being carried on with different treatments of burn-out soil. Following this trip of inspection profitable addresses were enjoyed.

EXPERIMENTAL WORK ON THE "BURN-OUT" LAND

In connection with the experimental work at this station in the reclamation of burn-out lands a progress report was issued early in 1930 as Pamphlet No. 114.

Anyone interested in this work may secure this pamphlet by writing to the Publications Branch, Department of Agriculture, Ottawa.

In 1930 the experimental work was expanded considerably so as to include more comprehensive trials of fertilizers and cultural methods. Provision has also been made for more experiments with sweet clover in order to study more fully its effects on the burn-out soil.

As more information is gained it is hoped that definite recommendations can be made on the problem of improving these lands.

RIVERHURST

Operator, N. C. Rudd

Seeding operations were started on the station fields May 7. The rainfall from the opening of spring until August 1 was 9·02 inches and was well distributed. This was sufficient for favourable growth. Grain crops made about average yields, but not so high as might be expected for the amount of rainfall. The scanty subsoil moisture carried over from 1929 would account for this result. Hay crops failed to make a stand owing to the poor start made in 1929. Harvesting with the combine started August 20.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT RIVERHURST

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (—) loss per acre	
	1930	Average 8 years		1930	Average 8 years	1930	Average 8 years
			$	$	$	$	$
Six-year rotation—							
Fallow	.....	.....	.....	6 62	6 62	.....	.....
Wheat—Marquis	18·5	18·1	0 68	12 53	13 72	—1 43	5 15
Barley—Hannchen	21·7	.....	0 47	10 27	.....	—5 93	.....
Corn—Northwestern Dent	4·0	3·4	2 92	11 68	11 61	—0 32	—1 31
Wheat seeded down	12·9	18·0	0 62	8 04	9 96	—0 30	8 81
Hay—western rye and sweet clover	Failure	.....	.....	7 08	.....	—7 08	.....
Profit or loss for rotation	.....	.....	.....	.....	.....	—2 51	.....
Three-year Rotation—							
Fallow	.....	.....	.....	6 62	6 63	.....	.....
Wheat—Marquis	20·5	21·0	0 61	12 53	14 60	—0 23	7 97
Wheat—Marquis	10·6	14·7	1 07	11 36	12 56	—5 00	2 55
Profit or loss for rotation	.....	.....	.....	.....	.....	—1 74	.....
Two-year Rotation—							
*Wheat—Marquis	13·2	17·6	0 59	7 85	10 96	—0 07	7 69
*Hay—sweet clover	Failure	1·2	.....	7 31	7 92	—1 44	6 73
Profit or loss for rotation	.....	.....	.....	.....	.....	—0 75	7 21
Demonstration Test Fields—							
Alfalfa	Failure	.....	.....	5 11	.....	—5 11	.....
Brome	Failure	.....	.....	6 02	.....	—6 02	.....

* Five-year average.

Hannchen barley was introduced into the six-year rotation this year replacing wheat. This crop aided in the control of prevalent weeds. From the table above it may be observed that corn has given fairly good yields on this station over a period of eight years. However, it is an expensive crop to produce on account of the high labour cost. Hungarian millet was seeded June 2 to replace the western rye sweet clover hay which failed, but it made only a short growth which was not worth cutting.

The operator distributed through sales in the district 329 bushels Marquis wheat, 84 bushels Banner oats and 40 bushels of Irish Cobbler potatoes. In poultry the following sales were made: 15 settings of Barred Rock hatching eggs; 75 baby chicks; 13 cockerels, and 16 pullets.

SHAUNAVON

OPERATOR, STANLEY MURCH

Spring opened in good time in this district and seeding of wheat on the station was started April 17. The spring was dry and cool with considerable wind. During the growing season from spring until August 1 the total rainfall was only four inches and during July the weather was extremely hot. The growth of all crops was about what could be expected from the amount of moisture available. Grain crops came through the best and on fallow land the yield was a little over half of the average yield for the last six years. All grain on stubble land was very light. Hay crops and corn were the lightest we have ever had on this station. Harvesting of wheat started August 8.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT SHAUNAVON

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 6 years	1930	1930	Average 6 years	1930	Average 6 years
			$	$	$	$	$
Six-year Rotation—							
Fallow	.....	.....	.....	7 50	7 21	.....	.....
Wheat—Marquis	13·0	23·2	1 04	13 49	15 74	−5 69	8 14
*Wheat-Marquis	5·0	14·9	2 18	10 90	11 37	−7 90	0 83
*Corn—Northwestern Dent	0·2	1·0	49 20	9 84	10 19	−9 24	−2 49
Wheat seeded down	8·5	20·6	1 10	9 36	11 44	−4 26	11 06
Hay:—Western rye and alfalfa	0·2	0·98	37 05	7 41	7 32	−5 41	3 65
Sweet clover	0·2	0·97	34 25	6 85	6 95	−4 85	3 51
Profit or loss for rotation	.....	.....	.....	.....	.....	−5 34	.....
Three-year Rotation—							
Fallow	.....	.....	.....	6 43	6 80	.....	.....
Wheat—Marquis	13·0	22·6	1 03	13 39	14 74	−5 59	10 13
Wheat—Marquis	3·0	12·4	3 56	10 68	11 61	−8 88	1 56
Profit or loss for rotation	.....	.....	.....	.....	.....	−4 82	3 90
Two-year Rotation—							
†Fallow	.....	.....	.....	6 43	6 94	.....	.....
†Wheat—Marquis	12·0	23·5	1 31	15 71	18 54	−8 51	3 37
Profit or loss for rotation	.....	.....	.....	.....	.....	−4 25	1 68
Demonstration Test Fields—							
Alfalfa—Grimm	Failure	0·33	.....	4 07	4 79	−4 07	0 16

Alfalfa average is for 1930 and 1929.
* Five-year average.
† Three-year average.

With low yields and low prices this year, no crop shows a profit over the cost of production. The losses on grain crops vary all the way from $8.88 to $4.26 per acre. By referring to the summary table above it will be observed that the two-year rotation of wheat and fallow shows a smaller loss than the three-year. This is accounted for by the heavy loss which had to be taken on the stubble crop.

Sales of seeds for the year included 700 bushels of Marquis wheat and 20 bushels Early Ohio potatoes.

There is a healthy flock of high producing Barred Rock poultry on this station. Hatching eggs to the extent of 24 settings were distributed to farmers in the district through sales this spring. A start has been made towards the establishment of a fruit plantation on this farm. A number of crab apple trees have been set out and also some raspberries, strawberries and currants. A successful field meeting and picnic was held on the afternoon of July 18. The Superintendent of the Swift Current Experimental Station was present and addressed the meeting.

TROSSACHS

Operator, Chas. Carlson

The first seeding was done on the station April 29. There was sufficient rainfall early in the season for favourable growth, but after July 11 there was no effective rain, so that grain crops did not fill as well as expected. Yields were below average but the quality of grain was good. Harvesting started August 5. The rainfall from the opening of spring until August 1 was 6·8 inches.

Western rye and sweet clover both failed to make a stand this year. This is two years out of six in which these hay crops have failed. Last year was unfavourable for starting these crops in competition with the grain crop with which they are always sown. By reference to the table above it will be seen that sweet clover has given an average yield nearly double that of western rye. Seed sales last spring amounted to 250 bushels of Marquis wheat. This was the product of registered seed and was cleaned with a Carter disk cleaner.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT TROSSACHS

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 6 years		1930	Average 6 years	1930	Average 6 years
			$	$	$	$	$
Three-year Rotation—							
Fallow	.....	.....	.....	6 22	7 00	.....	.....
Wheat, Marquis	9·5	18·0	1 20	11 39	14 00	−5 69	5 88
Wheat, Marquis	3·2	9·9	2 65	8 48	11 59	−6 56	1 47
Profit or loss for rotation	.....	.....	.....	.....	.....	−4 03	2 45
Six-year Rotation—							
Fallow	.....	.....	.....	6 45	6 79	.....	.....
Wheat, Marquis	12·7	20·9	0 92	11 78	13 89	−4 13	9 64
Oats, Victory	10·0	17·0	1 01	10 08	11 91	−7 50	−0 65
*Hay, sweet clover (millet 1930)	0·4	.....	19 27	7 71	.....	−3 71	.....
Wheat, seeded down	10·2	12·8	1 12	11 45	9 93	−5 33	8 00
†Hay, western rye (oats 1930)	0·2	0·7	25 20	5 04	5 47	−3 04	3 21
Hay, sweet clover	Failure	1·3	.....	3 34	6 58	−3 34	8 20
Profit or loss for rotation	.....	.....	.....	.....	.....	−3 86	.....

*Sweet clover failed this year and millet was reseeded.
†Western rye and sweet clover failed. Oats for hay replaced western rye. Sweet clover field was fallowed.

TUGASKE

Operator, Robert Wilson

Seeding was started on this station May 1. The spring was cool and windy, but there was a fairly good supply of moisture early in the season. It turned dry later and during July the weather was very hot. There was not sufficient moisture to carry the crops through successfully especially when the subsoil moisture was so much below normal. All crops suffered and yields were low. The quality of the grain, however, was good. All hay crops except one field failed to make a stand, but corn made a fair growth. Harvesting started August 11.

Wheat in the three-year rotation on stubble land spring ploughed gave a higher yield than on the fallow. This field was given an application of manure two years ago when it was fallowed. Hungarian millet was resown where the sweet clover failed, but it made only a patchy growth and was pastured off.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT TUGASKE

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 8 years		1930	Average 8 years	1930	Average 8 years
			$	$	$	$	$
Three-year Rotation—							
Fallow	.....	.....	.....	7 27	6 95	.....	.....
Wheat, Marquis	7·3	19·0	1 81	13 21	14 99	−8 83	5 34
Wheat, Marquis	11·0	14·2	1 14	12 56	12 97	−5 96	1 06
Profit or loss for rotation	.....	.....	.....	.....	.....	−4 93	2 13
Three-year Rotation—							
Fallow	.....	.....	.....	7 27	7 08	.....	.....
Wheat	6·8	16·9	1 94	13 21	14 39	−9 13	3 83
Sweet clover hay	Failure	1·4	.....	11 48	10 10	−10 48	4 92
Profit or loss for rotation	.....	.....	.....	.....	.....	−6 54	2 92
**Six-year Rotation—*							
Fallow	.....	.....	.....	7 27	7 71	.....	.....
Wheat, Marquis	6·2	17·7	2 08	12 92	14 74	−9 20	3 44
Barley, Trebi	7·0	.....	1 62	11 37	.....	−9 97	.....
Corn, Northwestern Dent	3·0	5·4	4 51	13 53	12 90	−4 53	5 42
Wheat, seeded down	3·0	15·8	2 46	7 39	10 83	−5 59	5 37
Hay, western rye and alfalfa	Failure	0·8	.....	4 90	6 99	−4 90	2 15
Profit or loss for rotation	.....	.....	.....	.....	.....	−5 69	.....
Demonstration Field Tests—							
Alfalfa, Grimm	Failure	0·9	.....	2 90	6 64	−2 90	2 38
†Western rye and brome	0·6	0·8	9 47	5 68	6 18	0 32	3 15

*Five-year average for crops in this rotation except corn and wheat after corn which are a four-year average.

†Three-year average.

WEYBURN

Operator, E. Meredith

Seeding was started on this station April 22. The spring was cool with the moisture condition less favourable than usual. Later during June and July the rainfall was much heavier and grain crops made a good growth and looked promising. A severe hail storm swept across this district July 26 and caused damage estimated at 75 per cent or more. Rust also set in about this time and caused some further damage. The yields of all crops were disappointing. The quality on the whole, however, was good. The season was unfavourable for hay which gave only a light crop. Harvest started August 22.

Unfortunately on account of the hail damage a fair comparison could not be made between Reward and Marquis wheat on the station this year. On some other fields in the district where there was only slight hail damage, the Reward came through the rust with less damage than the Marquis.

Garnet was not grown on the station this year, but it was grown for four years previous to 1930. In 1927 a year of rust and early frost, on account of its earliness, it gave better results than Marquis, 27 bushels of No. 4. Taking the average yield for the whole four years, it has given practically the same yield as Marquis and only in the one year has it shown a material advantage in grade.

Reward is an early wheat of higher quality than Garnet and more resistant to rust than either Garnet or Marquis. It has given promising results on this station, although not under test long enough to give a fair estimate of its value for the district. In the unfavourable year of 1927 on fallow, Reward gave a higher yield than either Garnet or Marquis and graded No. 2 as did Garnet. In 1928 it yielded slightly lower than Marquis but in 1929 exceeded that of both these varieties.

SUMMARY OF YIELDS COST AND PROFIT OR LOSS AT WEYBURN

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average 6 years		1930	Average 6 years	1930	Average 6 years
			$	$	$	$	$
Three-year Rotation—							
Fallow				7 34	7 40		
Wheat, Marquis	5·0	25·5	2 50	12 52	14 40	−9 52	12 64
Wheat, Marquis	4·0	21·5	2 65	10 60	14 86	−8 20	12 24
Profit or loss for rotation						−5 91	8 29
		Average 5 years			Average 5 years		Average 5 years
Six-year Rotation—							
Fallow				7 34	7 83		
*Wheat, Reward 1930	4·0	22·0	3 08	12 33	15 56	−9 93	9 52
†Oats (barley—Trebi, 1930)	5·4	63·0	1 88	10 16	14 15	−9 08	15 05
Fallow				7 32			
†Wheat (hay 1930)	0·5	25·8	15 14	7 57	12 40	−2 57	17 74
†Hay (oats—Victory, 1930)	0·4	1·4	20 02	8 01	9 42	−4 01	6 45
Profit or loss for rotation						−4 25	
Demonstration Test Fields—							
‡Alfalfa, western rye (mixture 6 pounds each)	Broken up	1·3		7 34	7 60		7 09

*Average for six years. Marquis grown previous to 1930.
†These averages are for the crops grown previous to 1930. The hay in this rotation is a mixture of western rye 10 pounds and alfalfa six pounds.
‡Four-year average.
All crops badly damaged by hail in July.

The operator of this station now grows a considerable acreage of this wheat on his farm and finds it suitable for his conditions. Other farmers have also increased their acreage of Reward since more has become available.

Mr. Meredith has sold a considerable quantity of seed wheat of all three varieties to farmers in the district. During the year he distributed 600 bushels through sales in this way. This was made up chiefly of Reward and Marquis. Early Ohio potatoes have done well on this farm and a surplus of 40 bushels were sold for seed in the district.

There is a good flock of White Wyandottes on this station. Twelve settings of hatching eggs were distributed through sales in the district during the past spring.

REPORT OF THE ILLUSTRATION STATIONS IN MANITOBA, EASTERN SASKATCHEWAN AND NORTH-WESTERN ONTARIO

D. A. Brown, B.S.A., Supervisor

Of the nineteen stations supervised from Brandon Experimental Farm, fourteen are in Manitoba, three in Eastern Saskatchewan and two in the extreme western part of Ontario.

SEASONAL NOTES

Work on the land was general on all stations before the end of April. At nearly every point snow disappeared rapidly, leaving the soil dry and in ideal working condition. Seeding proceeded without interruption and was accomplished in record time.

The growing season was peculiar in many respects. At the majority of points the dry soil and drought of early spring created grave fears that another dry season was pending. However, beneficial rains began in May and con-

MONTHLY PRECIPITATION AT STATION POINTS SUPERVISED FROM BRANDON, 1930

Month	Arborg, Man.	Dauphin, Man.	Dugald, Man.	Emo, Ont.	Eriksdale, Man.	Gilbert Plains, Man.	Gunton, Man.	Kamsack, Sask.	Katrime, Man.	Petersfield, Man.	Pipestone, Man.	Pelly, Sask.	Plumas, Man.	Roblin, Man.	Swan River, Man.	Wawota, Sask.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	0·00	0·40	0·60	0·90	0·25	0·46	0·20	0·40	0·40	0·18	0·15	0·30	0·45	0·56	0·51	0·00
February	1·60	1·10	1·57	2·76	1·39	0·90	1·18	0·80	1·11	1·54	0·78	0·95	0·50	0·77	0·80	0·80
March	0·50	0·15	0·32	1·25	0·30	0·00	0·32	0·85	1·30	0·20	1·20	1·30	1·00	1·72	1·90	0·60
April	0·36	0·87	0·30	1·11	0·81	1·05	0·50	2·42	0·70	0·4	0·26	1·97	0·60	0·82	0·75	0·45
May	2·90	3·92	3·80	4·34	3·16	3·10	3·12	4·02	2·95	4·00	2·82	3·49	2·69	1·97	2·99	2·10
June	3·88	1·73	3·10	3·16	3·67	2·44	2·44	3·30	3·46	2·48	3·78	3·44	2·24	2·22	3·65	1·97
July	1·26	2·06	3·20	3·35	3·26	2·60	4·62	1·60	2·11	2·90	4·03	2·14	1·46	4·19	2·75	1·46
August	0·85	0·81	0·90	1·90	1·12	0·88	0·00	0·88	0·68	0·25	0·70	0·81	1·45	0·54	1·65	0·55
September	0·85	0·60	1·50	0·46	0·63	0·59	0·25	0·78	0·36	0·99	0·35	2·22	0·30	1·02	2·88	0·13
October	1·00	1·80	2·50	1·90	2·03	0·78	2·32	1·00	1·78	2·43	1·64	1·53	1·70	1·71	1·18	1·86
November	1·82	0·28	3·30	1·08	1·10	0·25	1·52	0·60	1·10	1·61	0·35	0·70	0·25	0·67	1·07	0·80
December	0·25	0·15	0·90	0·00	1·13	0·18	0·80	0·27	0·70	0·25	0·30	0·25	0·22	0·39	0·45	0·10
Totals	15·27	13·87	21·99	22·21	18·85	13·23	17·27	16·92	16·65	17·43	16·36	19·00	12·86	16·58	20·58	10·82

tinued almost weekly until July 20. Few of these rains were general in nature. Rather were they heavy thunder showers with wide distribution, but there were localities here and there that missed these rains at critical times.

Heavy and continuous wind storms during the last week of May and early June caused serious soil drifting in many sections. Damage from this agency was sustained at Katrime, Plumas, St. Rose, and Wawota.

Before the heavy rains of July ceased wheat stem rust had spread to all stations. Late crops of common wheat suffered severely north of the main line of the C.P.R. Through the Russell, Roblin, Swan River and Pelly districts, numerous fields of late heavy summer-fallow wheat were almost ruined by the epidemic. However, all early wheat matured normally and yields were above the average.

Although yields and quality were generally better than average in Manitoba, few fields were able to show profit because of the extremely low prices prevailing.

FIELD CROPS

An outstanding demonstration in 1930 was the value of sod land in the mixed farming rotations for wheat. For a number of years the best method of preparing land from which hay has been removed, for a succeeding grain crop, has received careful attention. Results, particularly during the past two years, lead to the conclusion that if such land is ploughed and well worked down immediately the hay crop is removed, preferably before the end of July, that a satisfactory crop of grain the following year can be grown, providing other influences are normal. In 1930 wheat on sod land gave a higher average yield and profit per acre than that on bare fallow land, all stations included. The plentiful moisture supply during the growing season did not appear the chief factor responsible for this but rather the absence of soil drifting and reduction of stem rust in wheat fields ploughed from hay sod.

WEED CONTROL

Cultural practices for weed control were continued in connection with the crop rotation work. The three-year rotation of wheat, barley, sweet clover hay and break, has within a five-year period, proved its value as a profitable cropping scheme, for the reduction of weeds, especially wild oats and sowthistle. For bad infestations of sowthistle August cultivation of stubble, and July ploughing of hay land are two effective practices which work well into a good crop rotation.

While the shorter rotation of three years provides the most expedient measures for weed control the longer, or five-year rotation gives evidence of being the best all-round cropping system for Manitoba where weed, insect pest, and plant disease control must be combined. An example of the five-year rotation is: first year, summer-fallow; second year, wheat; third year, mixed sweet clover and ryegrass hay and break in summer; fourth year, wheat; fifth year, coarse grain.

SEED SALES

Sales of seed from the 1929 crop were made to 167 purchasers by station operators. Totals were: wheat, 2,394 bushels; oats, 1,368 bushels; barley, 738 bushels, and 3,115 pounds of sweet clover.

LIVESTOCK

Breeding of high grade livestock, whether cattle, sheep, swine or poultry, is encouraged on stations, where the operator is particularly interested in this branch of farming. Pure-bred herds of cattle are maintained by several operators and the grading up of herds on other stations is receiving attention. During the past year dairying and hog raising have substantially increased. Poultry raising is a special feature on all stations, and in every case the flock is either

pure bred or well graded up. Therefore, sales of birds and eggs for breeding purposes add to poultry improvement within a district. During 1930, 96 cockerels and 310 dozen eggs for breeding were sold from 18 stations.

HORTICULTURE

Improvement of grounds and home surroundings is sought on all stations. In some cases special attention is paid to vegetable gardening, in others to fruit growing or to landscape improvement. The amount of horticulture engaged in by Manitoba farmers is still quite insignificant, and it is hoped that the horticultural development under way on many of the Illustration Stations will encourage greater effort among farmers to have better gardens and more attractive home surroundings.

FIELD MEETINGS

Summer meetings were held on the stations at Dauphin, Dugald, Eriksdale, Gunton, Pelly, Pipestone, Roblin, St. Rose, and Wawota. At these meetings local farm problems were discussed and results of experimental work conducted at the Brandon Experimental Farm were given by the Superintendent and members of the staff.

COST OF PRODUCING CROPS

In a year such as 1930 when grain prices range appreciably below the cost of production, there is no more engaging problem than that of lowering the cost of producing farm crops so that the selling price may at least be kept within the cost range, rather than allow the margin to remain on the debit side. A study of the figures, from the various stations, presented in the tables below, show wide variation in costs between one locality and another and also between crops on the same station. Numerous factors influence these costs, many of which cannot be indicated in this report, but are all of importance when a farmer studies methods by which he may lower production costs. Increased cultivation, twice ploughing and other such labour made necessary for the control of weeds adds considerably to costs on some of the stations. The expense of a bare fallow is fairly high and can only be successfully met by the production of a high yielding, good quality crop, and not by a badly rusted, or lodged and poor yielding crop, when grain prices are low. The influence of new, and larger machines as a means for reducing costs, has not been studied on these stations. Neglecting this phase of the problem it is otherwise quite clear, that high yield coupled with as little cultivation as is possible are the two principal factors responsible for lowering the cost of production. Evidence from Illustration Stations in Manitoba indicates that the means for securing high yields with reduced labour for land preparation, lies in a well balanced cropping system which maintains fertility and keeps weeds under control.

Average costs and receipts from crops in three- and five-year rotations on Manitoba Illustration Stations for 1930 as presented below provide some idea of what returns farmers received from field crops this year.

AVERAGE RETURNS FROM CROPS ON MANITOBA ILLUSTRATION STATIONS, 1930

Number of fields	Crop	Yield in bushels or tons per acre	Cost of production per acre	Gross receipts per acre	Profit or (−) loss per acre
			$	$	$
19	Wheat on bare summer-fallow	19·70	13 95	12 20	−1 75
18	Wheat after one year clover and grass hay mixed	20·70	11 54	12 34	0 80
18	Oats after wheat	44·51	12 31	10 17	−2 14
7	Barley after wheat	27·35	12 05	5 80	−6 25
16	Mixed hay, clover and rye grass	1·45	8 97	11 36	2 39
13	Cost of summer-fallowing	.....	8 05	.....	.....

Cost of production figures are based on prices listed as follows:—

COST VALUES

Rent of land	7 per cent of land value plus taxes.
Use of machinery	$1.35 per acre.
Horse labour	8 cents per hour.
Man labour, threshing, and binder twine	Prevailing district rates.

COST OF SEED

Wheat	$1 30 per bushel.
Oats	0 75 "
Barley	1 00 "
Corn	4 45 "
Brome grass	0 22 per pound.
Western rye grass	0 16 "
Meadow fescue	0 24 "
Timothy	0 12 "
Alsike	0 27 "
Red clover	0 27 "
Alfalfa Grimm No. 1	0 45 "
Sweet clover	0 12 "
Sunflowers	0 10½ "

RETURN VALUES

Wheat, common, basis No. 1 Nor	$0 60 per bushel.
Wheat, Durum, basis No. 1 Durum	0 58 "
Oats, 2 C.W	0 23 "
Barley, 3 C.W	0 20 "
Corn, green for silage	3 75 per ton.
Sunflower for silage	2 75 "
Alfalfa hay	10 00 "
Clover and grass mixed hay	8 00 "
Oat hay or green oat sheaves	7 00 "

Prices for grain are the average for Sept., Oct., and Nov., 1930.

In the valuation of forage crops, the prices given are basic (as in cereals) and vary with the quality of product and the appreciation of available markets.

ARBORG, MANITOBA

OPERATOR, M. SHEBESKI

Seeding was accomplished much earlier than usual at this Station and throughout the district. During the summer growing conditions were good and other than late fields of wheat which suffered from stem rust, crops were harvested in good order.

Considerable energy is expended on horticulture at this Station. A fairly extensive vegetable garden is grown annually. A small trial orchard of hardy apples, plums, and cherries has been developed, and lawns, flower borders, trees and shrubbery are extensive enough to give an attractive and comfortable setting to the farmstead.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT ARBORG

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average three years		1930	Average three years	1930	Average three years
			$	$	$	$	$
Six-year Rotation—							
Wheat, Reward, seeded to grasses and clovers	22·00	18·93	0 71	15 62	12 71	−2 42	4 42
Hay, fescue, red and alsike clovers, western rye grass	2·25	3·18	3 44	7 74	9 69	14 75	24 20
Hay and break	1·75	1·25	4 25	7 44	7 18	10 06	6 25
Oats, Victory	61·00	43·16	0 23	14 26	12 38	−0 23	4 23
Barley, O.A.C. No. 21	20·00	28·41	0 53	10 71	11 55	−6 72	2 83
Summer-fallow	.....	.....	.....	8 84	8 26	.....	.....

Cost of producing wheat was 11 cents above prevailing market prices. Barley was a poor crop. It was the fourth successive grain crop on this field, due to the change from a five- to a six-year rotation in 1929. The rotation is now in proper order.

This six-year rotation embodies features applicable to the Arborg district where mixed farming is necessarily engaged in. It provides a fair acreage of the three important grain crops; coarse grains for feed and wheat for immediate cash returns. The second year grass and clover crop can be used for either hay or pasture.

DAUPHIN, MANITOBA

OPERATOR, A. E. FRENCH

The reputation this station has for high yields was well maintained in 1930. The soil in this locality is an unusually deep rich dark loam. In the fall of 1929 it was so dry and hard that ploughing on the plots was rendered impossible. The operator therefore prepared the oat fields by a double cultivation in place of ploughing. This was done in the fall and was harrowed twice before seeding last spring. The seed-bed was like a garden and the heavy yields of oats are a testimony to the productiveness of this soil even with slight tillage preparation, when weeds are few.

Station fields were quite free from weeds in 1930 and there is ample evidence that an arrangement of crops such as in this six-year rotation, when carefully managed, could be depended upon to keep a farm clean.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT DAUPHIN

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average five years		1930	Average five years	1930	Average five years
			$	$	$	$	$
Six-year Rotation—							
*Oats, sixty-day for hay	1·75	1·68	8 18	14 31	12 75	1 44	2 03
Wheat, Reward, seeded down	27·50	28·10	0 51	14 18	15 09	2 32	16 04
Hay, alfalfa; western rye grass; meadow fescue; a failure seeded to oats	75·00	.....	0 23	17 45	.....	0 20	.....
Hay and break	3·00	2·13	3 38	10 13	9 16	19 87	9 18
Wheat, Reward	40·00	32·18	0 39	15 73	18 08	8 27	16 78
Oats, Banner	72·50	54·65	0 22	16 45	15 73	0 12	8 60
Demonstration Test Plot—							
Alfalfa for hay	4·67	4·37	2 49	11 63	11 49	35 03	36 29

*Three-year average.

Prior to 1928 black summer-fallow was used as a preparation for wheat with which grass and alfalfa seeds were sown. Owing to rank growth of wheat on the fallow land with its attendant evils from lodging, and stem rust, it was decided to make only a partial fallow by growing sixty-day oats for hay, so that the land could be ploughed before the end of July. This practice has not reduced returns from the wheat crop but grass and alfalfa seeded with the wheat has been a failure. This appears due to the drier, lumpier nature of the seed bed following the oat crop and to the dry weather during the last two spring seasons. The inference here is, that stubble land preparation in dry years cannot be depended on to develop a stand of grass and clover when seeded with a nurse crop.

A 40-bushel crop of Reward wheat on the Illustration Station at Dauphin, Manitoba.

Following the failure of hay in 1929 oats were sown in 1930 to replace it. Although these yielded very well, a proportion of charges sustained by the failure of the hay crop was charged to oats which accounts for the loss recorded.

Alfalfa on this Station has been down six years. Reference to the figures above will illustrate the success that has attended this crop, and demonstrates that when once well established on good clean land alfalfa is without a peer among hay crops.

DELORAINE, MANITOBA

Operator, George Perry

Authorization to establish a station at this point was granted early in 1930. Only four fields could be cropped this year while preparations were made to have twelve fields included in three rotation systems, and, one in alfalfa to be seeded in 1931. There will be two rotations of three-year duration; one a straight grain system of wheat, wheat and summer-fallow, the other of wheat, sweet clover for hay or seed, and then corn. The five-year rotation is: summer-fallow, wheat seeded to grass and clover, hay, wheat, oats. It is hoped that a comparison of the mixed farming rotations with a straight grain system will be a source of useful information for farmers in this extensive agricultural district.

DRYDEN, ONTARIO

Operator, R. J. Johnston

Work began on this new station in April, 1930. The field occupied for demonstration purposes is a fairly heavy clay loam, quite representative of farm land in this district, and is 21 acres in extent. Its topography is well suited to the work for which it is intended. All of this area with the exception of six acres was in sod in 1930. Therefore, only two plots of three acres each could be seeded while the sod part of the area was used for hay then ploughed in preparation for crop in 1931. A six-year rotation of crops with the following sequence, will be demonstrated: first year, hoed crops; second year, oats seeded to alsike clover and timothy; third year, hay; fourth year, hay and break; fifth year, barley seeded to red clover; sixth year, red clover for seed. In addition to the crop rotation a small field will be seeded to alfalfa as a special demonstration plot.

DUGALD, MANITOBA

OPERATOR, THOS. ROBERTS

Heavy snow remained on the ground in this district until late in March. It however disappeared rapidly and seeding began April 19. The season was well suited to growth and all grain crops yielded satisfactorily with quality good.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT DUGALD

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average five years		1930	Average five years	1930	Average five years
			$	$	$	$	$
Six-year Rotation—							
Summer-fallow	.....	.....	.....	7 80	8 65	.....	.....
*Wheat, Reward, seeded down	25·00	28·50	0 62	15 54	16 61	−0 54	8 05
Hay, alfalfa; western rye grass; meadow fescue	Failure	1·05	.....	7 96	8 74	−7 96	2 93
Hay and break	1·12	1·35	7 55	8 46	8 59	0 50	5 65
Wheat, Reward	24·00	21·51	0 49	11 88	13 40	2 52	8 30
Oats, Victory	45·00	41·80	0 27	12 22	13 07	−3 22	9 11
Three-year Rotation—							
Corn, Northwestern Dent	8·5	8·60	1 66	14 13	16 38	19 87	6 47
Barley, Trebi	42·00	32·00	0 30	12 58	13 04	−4 18	2 19
Hay, sweet clover	1·50	1·62	5 93	8 90	9 69	3 10	6 40
Demonstration Test Plot—							
†Alfalfa for hay	1·25	1·67	5 72	7 15	7 88	5 35	11 29

*Two-year average. †Three-year average.

First year hay in the six-year rotation was a failure. This was seeded with a nurse crop of barley in 1929, on a plot which was carrying its third successive grain crop, instead of with wheat on summer-fallow. Although the alfalfa and grass started well with the barley, it killed out during the dry summer of 1929. The reason for having this field in barley seeded to hay was to bring the rotation back to proper order, following two years when crops were drowned out by surface flooding. This is another instance where it did not pay to use land following several successive grain crops, on which to sow grass and clover seed.

The corn crop was much cleaner than for several years. Liberal cultivation of the land before planting and frequent harrowings after seeding until the plants were six inches tall helped materially to control weeds and to reduce the intertillage otherwise necessary through the summer. By these means cost of production was lowered and with a good yield, substantial acre profits were made.

EMO, ONTARIO

OPERATOR, CHAS. J. LINQUIST

Selection of this station was made in 1929 and some preparatory field work was done in the fall of that year. This enabled all fields in a six-year rotation to be worked into proper sequence in 1930. In addition to rotation work a demonstration field of alfalfa will be seeded in 1931.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT EMO

Rotation and crops	Yield per acre, bushels or tons	Cost per bushel or ton	Cost per acre	Profit or (−) loss per acre
		$	$	$
Hoed crops—				
Potatoes, Irish Cobbler	225·00	0 20	46 26	43 74
Turnips, Hall's Westbury	344·00	0 10	34 50	103 09
Barley, seeded to alsike and timothy	47·00	0 34	16 23	1 57
Hay, first year	Yields not	taken 1930.		
Hay and break	"	"		
Barley, seeded to red clover for seed	34·00	0 43	14 74	−1 14
Oats and peas for hay replacing red clover	2·50	6 55	16 48	8 52

Profit on the turnip crop is calculated on the basis of market value f.o.b. Emo. However, the market for this crop is quite limited. Turnips when grown in large quantities would necessarily have to be fed to livestock in which case the usual value placed on them is calculated from the total dry matter at rates equalling cured hay.

ERIKSDALE, MANITOBA

OPERATOR, R. G. COWDERY

Seeding was begun earlier than usual in this district. Station fields which were summer-fallowed in 1929 were in good condition, and grew crops up to or above the average for the station and locality. Fields which were in sweet clover hay in 1929 and ploughed after removal of the hay did not grow good grain crops this year. The stony, shallow soil of this locality and the prevalence of sowthistle makes crop production difficult on land other than well prepared summer-fallow.

There is a small trial fruit orchard on this station. Additional planting was done in 1930, and the area now has some 50 apple, plum and cherry hybrid trees, besides raspberries and strawberries. A disappointing problem arose this year when several of the two and three year old trees had colourless foliage caused by the lack of chlorophyll or the green colouring matter within the leaves. This condition is commonly termed chlorosis. Several kinds of artificial fertilizer are being tried in an attempt to find out if the lack of certain plant food elements is the cause.

Only in exceptionally favourable years have paying crops been grown on land which grew sweet clover or any other crop the year previously. It is evident from the work to date on this station that a summer-fallow preparation is almost always essential to insure a reasonably clean and heavy yielding crop of grain. Sweet clover can be seeded with grain as a nurse crop and satisfactory results obtained.

The first three-year rotation in the above table was, until this year, a two-year rotation in which no summer-fallowing was done. Barley following clover was a failure nearly every year. It was therefore thought advisable to allow the clover to remain throughout the whole summer, take two crops if possible, and fallow the field the following year. This rotation as it now is arranged, it is hoped, will be more suitable to Eriksdale conditions where mixed farming is engaged in. It provides for a grain feed crop, followed by hay, and the hay field can be pastured until it is ploughed for fallow in the third year. This arrangement gives opportunity to kill sowthistle and to get the land in shape for crops.

The three-year grain rotation was begun in 1930. Most farmers in this locality still operate a cropping system similar to this. A comparison will therefore be possible between straight grain, and rotations including sweet clover, also, between the value of wheat and coarse grain crops.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT ERIKSDALE

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average three years		1930	Average three years	1930	Average three years
			$	$	$	$	$
Three-year Rotation—							
Summer-fallow	.....	.....	.....	8 15	.....	.....	.....
Barley, Trebi seeded to clover	16·00	18·60	0 73	11 96	11 82	−8 28	−4 99
Hay, sweet clover and break	0·50	0·92	23 54	11 77	9 21	−7 77	2 13
Four-year Rotation—							
Summer-fallow	.....	.....	.....	8 15	8 80	.....	.....
Oats, Banner, seeded to clover	36·50	34·33	0 42	15 41	12 93	−6 78	1 92
Hay, sweet clover and break	1·25	1·13	7 48	9 36	9 15	0 64	1 87
Barley	10·00	11·00	1 15	11 55	7 32	−9 25	−5 29
Three-year Rotation—							
Summer-fallow	.....	.....	.....	8 15	.....	.....	.....
Wheat	21·50	.....	0 73	15 80	.....	−2 90	.....
Oats	39·00	.....	0 39	15 06	.....	−5 31	.....
Demonstration Test Plot—							
Alfalfa for seed	343 lbs.	.....	0 03 per lb.	11 26	.....	74 49	.....

Best methods for the control of sowthistle by summer-fallowing have been tried at this station for the past three years. On fields where thistles have been mowed or pastured until August and then ploughed, cleaner and better grain crops have been obtained than where early summer ploughing and all summer cultivation was practised. The apparent reason for this is that in stony soil summer cultivation cannot be thoroughly enough done to keep sowthistle down, while August ploughing turns up the root mass at its weakest stage and several good cultivations during the hot dry weather usually experienced at this time of year, is most effective.

GILBERT PLAINS, MANITOBA

OPERATOR, A. W. BEST

The season was a very suitable one for the production of field crops on this station and in the district. Yields of grain on station plots were well above average while hay fields were somewhat below a four-year average.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT GILBERT PLAINS

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Five-year Rotation—							
Summer-fallow	.....	.....	.....	11 32	11 15	.....	.....
Wheat, Reward	35·00	25·00	0 60	20 98	17 76	−0 02	6 02
Barley, O.A.C. 21 seeded down	35·33	26·58	0 51	17 93	15 84	−9 81	1 63
Hay and break, sweet clover and timothy	1·25	1·88	7 34	11 00	10 10	1 00	10 15
Oats, Banner	52·00	57·33	0 27	13 95	14 93	−1 99	9 84
Demonstration Test Plot							
*Alfalfa for hay or seed	1·50	2·00	7 78	11 67	9 66	16 83	16 09

*The second crop of alfalfa set seed profusely. Most of this was frozen before it matured but 54 pounds of good seed per acre were harvested. The costs and value of seed produced are included in the statement above.

Couch grass has been a persistent weed at this point and has been the chief factor responsible for the large amount of cultivation necessary to keep the land clean. This extra work has made costs of production higher than they otherwise would have been and profits accordingly have been smaller. However, this weed is gradually being eradicated and at the same time heavy yields from crops are being secured.

Timothy does not mix well with sweet clover on the rather light soils of this station. Western rye grass would undoubtedly make a better mixture than timothy, but, because of the prevalence of couch it has not been deemed advisable to use rye grass.

GUNTON, MANITOBA

OPERATOR, ELLWOOD FRASER

Field work on this station gave all round evidence of substantial progress in 1930. Rotation fields are becoming freer from weeds. The grass and alfalfa mixture in the six-year rotation has completed its round of all fields and the improvement in soil character and productivity following the hay, has been quite noticeable. From many angles, the six-year rotation begun in 1925 is demonstrating that it is an improvement over a straight grain rotation for this locality.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT GUNTON

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average six years		1930	Average six years	1930	Average six years
			$	$	$	$	$
Six-year Rotation—							
Summer-fallow	.....	.....	.....	7 46	7 29	.....	.....
Wheat, Reward, seeded down	20·00	24·33	0 76	15 21	16 06	−3 31	12 66
Hay, alfalfa, western rye grass and meadow fescue	2·00	1·67	5 00	10 00	8 05	6 00	7 49
Hay and break	2·10	19·50	3 40	7 14	6 24	9 66	6 88
Wheat, Reward	21·00	19·50	0 54	11 26	13 52	1 34	6 88
Oats, Banner	26·00	29·75	0 41	10 75	12 59	−4 77	0 67
Three-year Rotation—							
Wheat, Reward	23·00	.....	0 54	12 01	.....	1 79	.....
*Barley, O.A.C. 21	1·50	.....	6 52	9 79	.....	−0 79	.....
Hay and break, sweet clover	1·50	.....	5 32	7 98	.....	4 02	.....

*Barley was cut for hay. It was the fourth successive grain crop on this field, necessitated by the commencement of the three-year rotation, and was poor and weedy.

The new three-year rotation occupies a nine-acre area, each field being three acres in size. This rotation has been introduced because of the good results it has been giving in weed control and maintenance of fertility at several other stations. Half of the sweet clover field will be ploughed down each year as green manure. This will, in a practical manner, demonstrate whether or not there are advantages from handling clover in this way.

KAMSACK, SASKATCHEWAN

OPERATOR, F. D. CRAIG

The six-year rotation which has been in operation since this station was established six years ago, was changed to one of five years' duration in 1930. At the same time several changes in crops and cultural practices were made. The chief reasons for these changes were because hay which was left down for two years in the longer rotation was not giving satisfactory results, and corn as

a substitute for bare summer-fallow appeared responsible for an increase rather than a decrease of prevalent weeds. Hay was therefore made a one-year crop by using sweet clover and rye grass in place of alfalfa and grass, while corn was discontinued in favour of a complete fallow year. More intensive fall cultivation of stubble fields for the control of weeds is now being tried.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT KAMSACK

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average five years		1930	Average five years	1930	Average five years
			$	$	$	$	$
Five-year Rotation—							
Summer-fallow	.....	.....	.....	8 06	.....	.....	.....
Wheat, Reward, seeded down	20·50	22·95	0 55	11 26	12 37	1 04	11 95
Hay and break, sweet clover and western rye grass	1·75	1·38	4 82	8 43	7 93	5 57	4 03
Wheat, Reward	18·00	23·21	0 64	11 93	13 84	−1 13	9 40
Oats, Victory	40·00	48·79	0 27	10 82	15 18	−1 67	8 80

Hay was a good crop. The mixture of sweet clover and western ryegrass makes a stronger growing hay than that of alfalfa, ryegrass and meadow fescue. Alfalfa alone, however, does very well in this district and in 1931 a special demonstration plot will be seeded to this crop.

Reward wheat seeded down, was on corn land and shows a lower cost per acre than had the land been bare summer-fallow in 1929.

KATRIME, MANITOBA

OPERATOR, A. E. WALKER

Spring opened early at this point. Wheat seeding began April 7 and continuously good weather made possible a completion of seeding operations in record time. Weather was quite dry until early June and frequent heavy winds provoked soil drifting which seriously injured grain particularly on summer-fallow fields.

In addition to field crop work, horticulture is receiving special attention at this station. Much of the operator's time is spent in the orchard, gardens and grounds. These are more extensive than is usual on prairie farms. Hardy fruits, shrubbery, perennial flowers and other horticultural material have been under trial for some years and valuable information relative to suitable varieties for this district is available.

SUMMARY AND YIELDS AND COST OF PRODUCING CROPS AT KATRIME

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average two years		1930	Average two years	1930	Average two years
			$	$	$	$	$
Six-year Rotation—							
Summer-fallow	.....	.....	.....	6 83	7 13	.....	.....
Wheat, Reward, seeded down	10·00	14·66	1 35	13 50	15 00	−7 92	0 57
Hay, alfalfa; western rye grass, meadow fescue	2·00	1·62	5 35	10 70	10 95	5 30	4 58
Hay and break	1·13	1·44	6 82	7 71	9 20	1 33	4 45
Wheat, Reward	15·00	16·00	0 77	11 50	14 49	−2 50	1 95
Oats	42·00	38·87	0 29	12 42	14 16	−1 08	1 13
Demonstration Plot—							
Alfalfa for hay	0·85	1·30	8 68	7 38	7 99	1 12	7 63

Alfalfa yield was light due to the killing out of large patches which had been winter pastured by rabbits. Sowthistle was prevalent on these bared areas hence it was decided to plough the field after the second crop of hay and prepare it for grain crop in 1931.

Reward wheat on summer-fallow was badly damaged by soil drifting which caused the low yield shown in the table above. Grass and alfalfa seeded with this wheat made such a poor start on the windswept field that its chance of producing a hay crop in 1931 is doubtful.

PELLY, SASKATCHEWAN

OPERATOR, W. J. BETTINSON

This station has been in operation two years; at the end of which time very satisfactory progress can be reported. The five- and three-year rotations are already reducing the prevalence of weeds and are proving a source for useful information relative to problems in field crop production. The three-year rotation with two successive hay crops—one of sixty-day oats, the other sweet clover, is demonstrating a real ability to clean land infested with wild oats and some sowthistle.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT PELLY

Rotations and crops	Yield per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average two years	1930	1930	Average two years	1930	Average two years
			$	$	$	$	$
Five-year Rotation—							
Summer-fallow	.....	.....	.....	6 83	7 48	.....	.....
Wheat, Reward seeded down	23·00	23·25	0 69	15 93	16 47	−2 59	5 47
Hay and break, sweet clover and rye grass	1·75	.....	7 05	12 34	.....	1 66	.....
Wheat, Reward	17·50	20·62	0 63	11 00	14 36	−0 85	6 13
Oats	44·00	42·62	0 27	11 89	14 27	−1 77	2 43
Three-year Rotation—							
Wheat, Reward	25·25	24·37	0 57	14 48	16 11	−2 36	5 22
Hay, Sixty-day oats, seeded to clover	2·00	1·75	5 88	11 75	13 28	4 25	2 96
Hay and break, sweet clover	1·85	.....	4 67	8 65	.....	6 15	.....

While Reward wheat in the three-year rotation yielded well and cost less per bushel than the two wheat fields in the five-year rotation, it showed a considerable loss per acre because it graded down to 5 Northern. This plot developed a very heavy growth which rusted badly and this was responsible for a poorer quality and a lower yield than might otherwise have been expected.

Sixty-day oats make exceptionally good green sheaf feed. By cutting them about the middle of July weeds which are in the crop are removed before they re-seed.

Sweet clover seeded with the oat hay crop has made a fine stand so far. With their removal at mid-summer followed by immediate ploughing of the field which is then worked as a fallow for the rest of the year, the worst weeds are kept under control.

PETERSFIELD, MANITOBA

OPERATOR, WM. MICHAEL

Progress was well maintained at this station in 1930. For the most part fields were quite free from weeds and the menace from this source when the station began six years ago, has largely disappeared. Crops yielded well but all grain fields show losses due to the low selling price.

During 1930 the operator completed a new stock barn; rearranged his farm yard and improved his dwelling house. He plans to carry through a program that will complete attractive surroundings for a set of very good farm buildings.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT PETERSFIELD

Rotations and crops	Yields per acre, bushels or tons		Cost per bushel or ton, 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Six-year Rotation—							
Summer-fallow	.....	.....	.....	11 19	11 57	.....	.....
Wheat, Reward, seeded down	28·25	33·58	0 63	17 72	19 83	−0 77	14 36
Hay, alfalfa; western rye grass, and meadow fescue	1·85	2·80	4 97	13 79	13 08	1 01	15 37
Hay and break	2·25	1·94	4 46	10 48	9 65	7 52	8 97
Wheat, Reward	16·50	21·50	0 85	14 06	14 18	−4 16	8 10
Oats, Banner	48·50	25·87	0 27	13 16	11 96	−2 00	−1 63
Three-year Rotation—							
Corn, Northwestern Dent	12·00	8·87	2 81	33 70	25 47	2 30	4 30
Barley, Trebi seeded to clover	67·00	42·50	0 22	14 64	14 95	−1 24	4 23
Hay and break, sweet clover	3·25	2·19	2 70	8 72	10 65	17 22	9 90

The soil on this station is a deep rich black loam. Alfalfa and grasses do exceptionally well on it. So thick and deeply rooted does alfalfa become when down two years in the six-year rotation, that it is a difficult matter to make a good job of ploughing the sod land. In a dry summer such as that of 1929, it was impossible to break after the second year hay was removed. This was done in the late fall and was the factor responsible for the comparatively poor showing of wheat following hay. Similar difficulty to get breaking done after alfalfa and grass was experienced in 1930.

Corn was a heavy crop. It was kept free from weeds all summer but at a high cost per acre as indicated by the figures in the table above. As ears matured, myriads of blackbirds fed on them, and so completely did they devour the grain over most of this two-acre plot that, when cut, the crop could be classed as stover. Owing to this the value was reduced $1 per ton, green weight, which resulted in a meager per acre profit being realized.

PIPESTONE, MANITOBA

OPERATOR, WM. FORDER

Conditions on this station and in the surrounding district were such that good crops were matured and harvested. Grain on the plots yielded well above the average with the exception of wheat on corn land.

Flower and vegetable gardening receive special attention here. Within the past two years a fairly extensive lot of hardy perennials have been planted in a border with suitable shrubbery as a background. Annual flowers are also grown in profusion and the beauty they contributed to surroundings illustrates effectively the possibilities along these lines even on a light soil such as that at Pipestone.

Corn has been a successful crop on this station since it was started five years ago. Few weeds are present to require much intertillage, therefore, the cost of production has been kept at an unusually low figure for this crop.

Sweet clover sown with wheat in both rotations has for the past three years made a very good catch and has gone into the winter with an even and satisfactory stand. For a reason yet undetermined it has, however, in each of these

years been badly thinned out during winter or early spring. Fields show an extreme patchiness and yields have been light as a study of results in the above table show.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT PIPESTONE

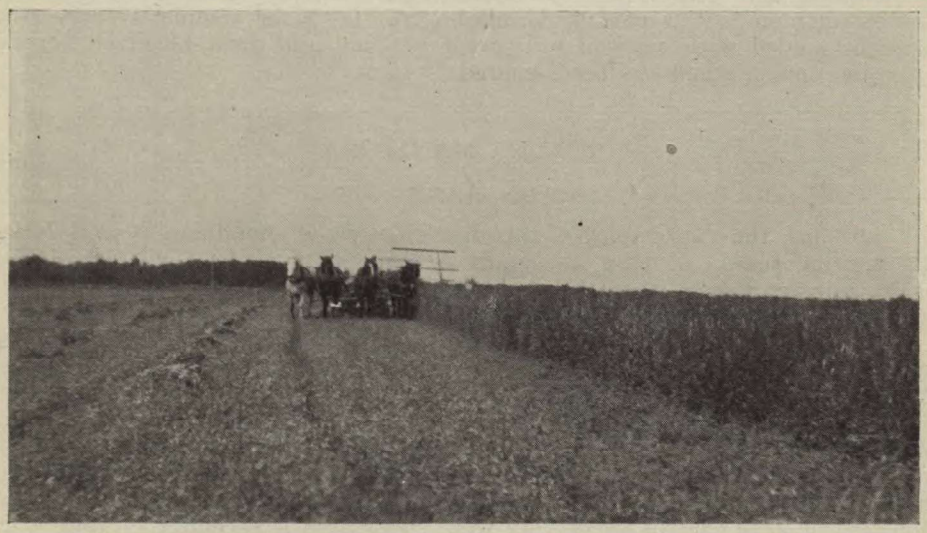
Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Five-year Rotation—							
Corn, Northwestern Dent	6·50	5·16	1 44	9 37	10 07	10 13	6 42
Wheat, Ceres, seeded down	11·25	12·19	0 67	7 56	11 44	−0 81	1 05
Hay, sweet clover and brome	0 50	0·87	11 52	5 71	6 17	−1 71	−0 36
Wheat, Mindum	20·00	11·42	0 48	9 69	11 10	2 31	1 02
Oats, Victory	32·00	21·81	0 29	9 31	10 64	−1 95	−1 34
Three-year Rotation—							
Wheat, Mindum	21·50	14·12	0 45	9 68	11 71	3 22	−0 24
Oats, Victory seeded to clover	31·00	21·50	0 29	8 96	10 25	−1 85	−0 74
Hay and break, sweet clover	0·50	0·75	11 52	5 71	6 31	−1 71	0 57

Half of the sweet clover field in the three-year rotation is ploughed down as green manure about the end of June. The other half is removed for hay and the land ploughed before the end of July. The object is to determine the value of either practice on the succeeding crop of wheat. So far ploughing down the clover has shown no advantage.

PLUMAS, MANITOBA

OPERATOR, FRED. BUSCHAU

Grain yields were generally below average in this district in 1930. Soil drifting in June severely injured the crops, and, as the summer was drier here than in the majority of Manitoba districts there never was complete recovery from the set-back sustained by sandstorms. Two wheat fields on the station were thinned severely by these storms.



Cutting sweet clover on the Illustration Station at Plumas, Manitoba.

Steady progress is being made with weed control on this station. Sowthistle is the chief pest and causes extremely heavy losses in the district. By rotation of crops and careful tillage it has been reduced on station plots until it is no longer troublesome.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT PLUMAS

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Six-year Rotation—							
Summer-fallow	.....	.....	.....	6 74	8 62	.....	.....
Wheat, Reward, seeded down	18·50	18·25	0·79	14 58	12 51	−3 48	2 68
Hay, sweet clover and rye-grass	0·75	1·52	13 35	10 01	8 04	−4 01	7 66
Hay and break	0·75	0·86	7 92	6 34	5 55	0 34	2 39
Wheat, Mindum	17·50	21·35	0 56	9 90	13 47	0 40	6 88
Oats, Victory	22·00	20·03	0 47	10 39	10 26	−5 33	0 55
Three-year Rotation—							
Corn, Northwestern Dent	7·00	6·90	2 24	15 67	16 11	12 33	6 75
Wheat, Mindum, seeded to clover	14·00	14·30	0 60	8 47	10 79	0 07	3 00
Hay and break, sweet clover	1·88	1·08	4 22	7 83	7 27	7 21	2 53
Demonstration Test Plot—							
Alfalfa for hay	0·50	.....	22 90	11 45	.....	−6 45	.....

Corn land as in 1929 was quite clean. Several harrowings were given at intervals until the crop was about six inches tall. Following this treatment a small amount of intertillage kept the weeds well in check. The yield was only about average but with a low cost of production satisfactory acre profits are shown.

Only one year out of five has alfalfa given satisfactory yields at this station. In 1927 the yield from two cuttings was four tons per acre. The field killed out during the winter of 1927-1928, late fall and winter pasturing being probably responsible. Reseeding was done on a well prepared fallow in 1929 but the dry summer of that year developed a poor stand and again the field will have to be ploughed up. This experience demonstrates that on lighter loam soils such as are common to this part of Manitoba, alfalfa, to be completely successful must be seeded with care on well prepared land and must be given careful attention once a stand has been secured.

ROBLIN, MANITOBA

OPERATOR, ARNOTT BROS.

Although the greater part of this district received abundance of rain during the growing season of 1930, the station farm and immediate vicinity missed heavy rains at a time when they were badly needed. This, together with stem rust caused yields to be slightly lower than average.

Stem rust was widespread and severe throughout the locality. Early wheat crops escaped fairly well but large areas of late crops suffered to such an extent that they were not worth cutting.

Reward wheat seeded down on a summer-fallow land was not put in until May 15, while other wheat fields were seeded April 22. Stem rust attacked the later crop which had a heavy straw. As a result both yield and quality were greatly reduced and a large per acre loss was sustained. The three-year rotation continued to control weeds very well. This area is becoming cleaner every

year and this year wheat and barley were particularly free from wild oats and Canada thistle. This latter weed is prevalent in this district and has been difficult to control. A rotation such as the three-year one appears to provide cultural practice conducive to its eradication.

Flower garden and shelter belt on the Illustration Station at Roblin, Manitoba.

The five-year rotation has not so far controlled weeds as efficiently as the shorter cropping system. Sowthistle has been kept in check but wild oats and Canada thistle persist on several of the fields.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT ROBLIN

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average three years	1930	1930	Average three years	1930	Average three years
			$	$	$	$	$
Five-year Rotation—							
Summer-fallow	.....	.....	.....	8 95	8 27	.....	.....
Wheat, Reward, seeded down	12·00	18·75	1 24	14 92	15 49	−8 32	4 28
Hay and break, sweet clover and western ryegrass	1·20	1·32	8 72	10 46	10 26	−0 86	1 12
Wheat, Reward	22·00	22·41	0 64	14 09	14 25	−0 89	7 35
Oats, Banner	28·25	21·88	0 35	10 05	11 15	−3 35	0 77
Three-year Rotation—							
Wheat, Reward	22·50	22·83	0 54	12 27	14 10	1 23	8 65
Barley, Trebi, seeded to clover	28·00	31·00	0 38	10 64	12 57	−4 48	2 46
Hay and break, sweet clover	0·75	1·33	8 96	7 15	8 38	−1 15	3 11
Demonstration Test Plot—							
Alfalfa for hay	1·73	1·91	4 33	7 51	8 75	9 79	11 59

STE. ROSE DU LAC, MANITOBA

OPERATOR, JOS. FITZMAURICE

A fairly good crop year was experienced in this district in 1930. Had grain prices been reasonably good the majority of farmers would have been more successful than for the past few years.

Station yields were reduced by the severity of sandstorms which occurred in June, when grain was about 3 inches high. Wheat on the fallow plot was badly blown and sweet clover seeded with it made a stand.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT ST. ROSE

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton 1930	Cost per acre		Profit or (−) loss per acre	
	1930	Average four years		1930	Average four years	1930	Average four years
			$	$	$	$	$
Five-year Rotation—							
Summer-fallow	.....	.....	.....	5 84	5 53	.....	.....
Wheat, Reward, seeded to clover	14·00	14·50	0 82	11 45	12 20	−3 05	1 33
Hay and break, sweet clover	1·25	1·00	6 31	7 89	6 59	2 11	2 74
Wheat, Mindum	20·00	19·00	0 54	10 74	12 61	1 26	2 77
Oats, Banner	20·00	24·25	0 44	8 76	9 24	−4 16	2·11
Demonstration Test Plot—							
Alfalfa and western rye grass mixed hay	1·75	.....	4 96	8 68	.....	5 32	.....

The stand of sweet clover has been poor until this year when hay yielded fairly well. Sweet clover is a very useful crop for this district where soils are light, sowthistle bad, and soil fertility none too high. However, there has been difficulty getting this crop to come through the winters satisfactorily. Good, even stands can be secured with the wheat crop almost every normal year but the field thins into patches before the following spring. This condition warrants some investigation since the cause may be winter-killing, root disease or some other factor.

The plot having a mixture of alfalfa and western ryegrass seeded at the rate of 8 pounds each per acre made an even, thick stand, and a good crop of hay was cut. Several attempts have been made with alfalfa either alone or with grass at this station but this is the first year a successful crop has been secured. On the light soils peculiar to this district where sowthistle is extremely prevalent, alfalfa mixed with grass would be more advisable than to attempt alfalfa alone.

SWAN RIVER, MANITOBA

OPERATOR, FRANK E. SMITH

The soil on this new station is fairly representative of the larger portion of the Swan River valley in that it is a dark rich friable loam broken from burnt over bush land. Demonstration work has been planned so that results may be applicable throughout this extensive farming settlement.

About half the area included in the station has been broken during the past five years and is quite free from weeds. The other half has been cropped for 10 or more years and on it most of the weeds found in the district are prevalent. Practical methods for weed control will therefore be sought.

Six fields of four acres each will be used to demonstrate a six-year rotation as follows: first year summer-fallow, second year wheat seeded to alsike and timothy on one half the field and, alsike, meadow fescue and western rye-grass on the other half, third year hay, fourth year hay and plough up, fifth year wheat, sixth year coarse grain. In addition to this rotation there will be a demonstration plot for alfalfa.

With some preparatory work in 1929 it was possible to crop all fields this year in such order as will bring the rotation into proper sequence in 1931.

In addition to field crop work the operator on this station has a young but fairly extensive trial orchard, while a border of shrubbery, and hardy perennials and an extensive vegetable garden provide a sphere for much valuable illustration work.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT SWAN RIVER

Rotation and crops	Yield per acre, bushels or tons	Cost per bushel or ton	Cost per acre	Profit or (—) loss per acre
		$	$	$
Six-year Rotation—				
*Oat hay, fallow substitute	2·00	5 04	10 08	—0 08
Wheat, Reward, seeded down	21·25	0 59	12 60	—0 49
Hay, timothy	1 00	6 65	6 65	1 35
Hay, and break, oats in place of grass	2·25	4 65	10 46	3 04
Wheat on sod land	22·50	0 51	11 44	1 39
Oats, Victory	75·00	0 15	11 72	3 28
Demonstration Test Plot—				
Barley, O.A.C. 21, seeded to alfalfa	40·00	0·22	8·99	—0 99

*Oat hay was weathered and therefore valued at $6 per ton. This accounts for a loss although the yield was heavy.

Bad weather after cutting and low prices, reduced the value of crops, which otherwise would have been highly satisfactory.

WAWOTA, SASKATCHEWAN

OPERATOR, CHAS. PRYCE

Seeding began in this district about five days earlier than the average time. There was sufficient moisture to bring along what appeared to be a real good crop but, rust and hot weather caught the later fields of wheat and yields were greatly reduced.

Station fields were seeded early and grain from these was of excellent quality.

SUMMARY OF YIELDS AND COST OF PRODUCING CROPS AT WAWOTA

Rotation and crops	Yield per acre, bushels or tons		Cost per bushel or ton 1930	Cost per acre		Profit or (—) loss per acre	
	1930	Average five years		1930	Average five years	1930	Average five years
			$	$	$	$	$
Five-year Rotation—							
Summer-fallow	.....	.....	.....	6 13	6 68	.....	.....
Wheat, Reward, seeded to hay	23·00	21·00	0 58	13 28	13 35	0 52	9 11
Hay and break, sweet clover and western rye grass	2·00	1·45	5 36	10 73	7 67	5 27	4 59
Wheat, Reward	22·50	19·50	0 51	11 44	12 52	2 06	8 62
Oats	60·00	48·00	0·19	11 73	11 67	2 07	9 39
Demonstration Test Plot—							
Sunflowers	10·00	.....	1 86	18 59	.....	8 91	.....

It is noteworthy that this was the only station supervised from Brandon that did not show a loss from any crop grown in 1930. The low cost of production it will readily be seen was responsible for the small per acre profits in a season when grain prices were generally much below the cost of production. These costs were kept down to a considerable extent because weeds are not troublesome on this station and no extra tillage has to be expended for their control.

For five years a six-year rotation was practised. This was changed to a five-year system by leaving hay down one year instead of two. The hay crop was changed from a mixture of alfalfa, western rye grass and meadow fescue to sweet clover and western rye grass.

During the time the six-year rotation was under trial the second year hay crop was seldom worth cutting. With the change to one year in hay it is expected that sweet clover and rye grass will make a very good crop. Judging by its splendid yield in 1930 it should be highly satisfactory.

Preparatory work was done this year on a new three-year rotation which occupies an area of nine acres part of which was formerly used for a special demonstration plot and part for the sixth plot in the six-year rotation. The rotation to be demonstrated is,—first year wheat, second year barley seeded to sweet clover, third year sweet clover hay on one half of the field and sweet clover ploughed down as green manure on the other half.

CO-OPERATIVE TRIALS ALONG THE LINE OF THE HUDSON BAY RAILWAY

Field and garden crops have been tested for the past six years by co-operators from the Hudson Bay Junction in Saskatchewan, north to Thicket, which is 185 miles on the railway north of The Pas. On the intervening stretches of the railway from Thicket to Churchill, tests have been conducted during the past two years, while at Churchill itself this is the first season that plots have been seeded. These plots are small in area, each variety occupying six rows one rod long.

The chief object of these trials is to get some idea of the length of the growing season in these northern latitudes and to secure information as to the productiveness of the soil.

Generally speaking, the 1930 season was particularly favourable for nearly all vegetative growth in this region. The spring opened somewhat earlier than usual and from the latter part of May until early September continuous good weather was enjoyed. Severe frosts in June are not unusual but the majority of points escaped this hazard in 1930. Abundance of moisture fell throughout the growing season all along the southern part of the railway. This was followed by hot dry weather during the latter part of August which rushed crops to maturity before the frosts of early September.

Early maturity is one of the first considerations in any crop grown this far north. The long summer days are conducive to rapid growth. It is therefore not surprising that in such a favourable season as that of 1930 wheat matured at Mile 42 in 80 days, barley in 62, and oats in 68 days. At Mile 237 on new and rather wet clay soil, wheat seeded in early June matured in 85 days. At Mile 279 Reward wheat seeded in early June matured a good No. 1 Northern sample by August 25.

The table presented below gives the places at which tests have been conducted, the duration of these tests, and the years in which frost has damaged grain before it was mature.

RESULTS OF CO-OPERATIVE TESTS

Location of tests	Duration of tests, years inclusive	Details of frost damage
Hudson Bay Jct.	1925–1930	Only in 1928 has crop been frozen. Date, August 25.
The Pas	1917–1930	All crops have matured throughout these years before frost injury.
Cormorant, Mile 42	1925–1930	No frost injury before maturity to any crop during this period.
Wabowden, Mile 137	1925–1930	Late wheat caught September 22, 1928. This has been the only frost damage.
Thicket, Mile 185	1925–1930	Early September frost in 1926 caught all wheat before maturity; Marquis frozen September 15, 1927. In 1928 late August frosts caught all varieties.
Pikwitonei, Mile 214	1929–1930	All crops frozen September 2, 1929, before maturity. In 1930 all wheat cut before September 2 escaped, and grade was good. This included the latest varieties. All those cut after wet freezing weather in early September were bran wrinkled.
Arnot, Mile 237	1929–1930	No varieties matured in 1929. Same conditions prevailed here in 1930 as at Pikwitonei.
Mile 279	1930	Reward wheat fully mature before frosts of first week in September.
Gillam, Mile 327	1929–1930	No grains mature before killing frosts either year.
Churchill	1930	Only few kernels in heads of early grains matured before frost. First hard frost September 21.

HUDSON BAY JUNCTION.—Rust infection was severe but it occurred when wheat was well advanced and the damage was slight as may be seen from the yields and weights given in the table.

THE PAS.—All varieties matured here and samples were very good. However, harvesting was delayed until birds had taken most of the crop and no data of yields could be obtained. At this point a small field of Reward wheat was harvested August 15, and despite a rust infection of from 20-40 per cent at time of cutting the sample weighed 67½ pounds per measured bushel and graded No. 1 Hard.

CORMORANT.—The season here was wet and growth was immense. Most of the grain varieties lodged to such an extent that the quality was greatly impaired. Besides wheat, oats and barley; fall rye, buckwheat, sweet and red clover ripened seed satisfactorily while grass hays did remarkably well.

WABOWDEN, MILE 137.—Mr. Hugh Gray seeded a set of test plots here. The soil used was a heavy, light coloured clay loam which has been under cultivation for several years. The stand of all varieties was thin and somewhat short. They all matured before the middle of August and samples were good. Harvesting was not done until most of the crop was destroyed and yield data were therefore not available.

THICKET, MILE 185.—Mr. H. E. Wells at this point had a set of plots and in addition a splendid small field of Reward wheat. All his crop was well matured by August 20. Samples of all grains were plump as weights indicate, but, starchy kernels reduced the grade in all but Garnet which was a beautiful sample.

PIKWITONEI, MILE 214.—Trials here in 1930 were on a clay slope leading down to the river. The soil has been cultivated for several years. Growth of all grains was about all that could be desired and earlier varieties matured about August 20. Later sorts such as Marquis and Mindum were ready for cutting by the end of August but wet weather set in followed by severe frost and before all the plots could be cut, bran was frost wrinkled, although the weight per bushel remained high.

SUMMARY OF CO-OPERATIVE TESTS ALONG THE LINE OF THE HUDSON BAY RAILWAY, 1930

Variety	Hudson Bay Jct., R. Jervis				Cormorant Mile 42, Jas. Turnbull				Thicket, Mile 185, H. E. Wells and Geo. Cowan				Pikwitonei, Mile 214, W. G. Harpe			
	Stem rust	Yield per acre	Weight per bush.	Commercial grade	Stem rust	Yield per acre	Weight per bush.	Commercial grade	Stem rust	Yield per acre	Weight per bush.	Commercial grade	Stem rust	Yield per acre	Weight per bush.	Commercial grade
	%	bush.	lb.		%	bush.	lb.		%	bush.	lb.		%	bush.	lb.	
Wheat—																
Reward....	40–60	45·8	66·50	1 Nor.	10–20	55·2	65·00	1 Nor.	Trace	30·0	66·50	1 Nor.	Trace	33·4	66	1 Nor.
Garnet.....	50–70	32·8	65·50	2 Nor.	20–40	59·9	62·00	2 Nor.*	"	41·3	65·50	2 Nor.	"	28·0	65	2 Nor.
Marquis....	40–60	32·8	62·00	2 Nor.	20–40	42·0	60·50	2 Nor.*	"	35·0	65·50	2 Nor.†	"	36·5	64	2 Nor.†
Ceres.....	20–40	40·7	64·50	2 Nor. starchy	tr.–10	48·7	59·00	4 Nor.	"	33·2	65·50	1 Nor.	Nil	25·3	62	2 Nor.
Mindum....	Trace	62·5	67·50	1 Durum	Nil	36·2	59·00	4 Durum	Nil	33·8	68·00	1 Durum	"	35·5	66	2 Nor.
Oats—																
Banner.....	6–15	98·0	43·00	2 C.W.	Trace	45·4	29·00	2 Feed*	Trace	97·6	44·50	2 C.W.	Nil	84·7	43	2 C.W.
Victory.....	6–15	104·5	43·00	2 C.W.	"	52·6	30·00	2 Feed*	"	132·7	44·50	2 C.W.	"	75·7	44	2 C.W.
Alaska.....	Trace	120·0	44·50	Seed grade	"	59·5	28·50	3 Feed*	"	84·0	41·00	2 C.W.	"	40·6	45	2 C.W.
Gopher.....	"	111·9	39·0	2 C.W.	"	38·5	32·50	1 Feed*	"	98·7	40·00	2 C.W.	"	45·9	40	2 C.W.
Barley—																
O.A.C. 21...	10–20	93·6	53·25	2 Six-row	"	82·1	54·00	2 Six-row	Nil	65·8	52·50	1 Six-row	Nil	43·5	48	2 Six-row
Trebi.....	10–20	115·0	51·00	2 Trebi	"	103·5	50·00	2 Trebi	"	69·9	52·50	1 Trebi	"	25·8	54	1 Trebi
Duckbill...	20–30	70·8	55·25	1 Two-row	"	41·6	45·50	4 C.W.	"	57·5	56·00	1 Two-row	"	41·8	53	3 C.W.

*Plots at Cormorant lodged severely and this greatly reduced the quality of the grain.

†Grain plump but badly piebald.

NOTE.—The plots at Pikwitonei were trampled by a horse before harvesting. The yields of varieties at this point cannot therefore be compared with accuracy. The weight per measured bushel and the commercial grade will however give fair indication of variety performance.

ARNOT, MILE 237.—Robert Carson, the co-operator here, sowed his plots on the same ground as in 1929. While last year very poor growth resulted, this season all varieties grew normally. Mindum attained a height of 45 inches and matured a No. 4 sample before the end of August. For some reason, probably soil peculiarity, the other varieties appeared to come to maturity before frost but the samples were not a good grade of "feed."

Robert Carson, Mile 237, Hudson Bay Railway, in his rod-row plots.

MILE 279.—Mr. Rod. McLeod sowed a plot of Reward wheat and some early oats and barley at this point. The wheat ripened a good No. 1 sample within 90 days from seeding and had straw 38 inches tall. The barley and oats ripened normally.

CHURCHILL.—Mr. E. Wood put in the first grain and garden seeds that have been tested at Churchill. He dug up a small piece of stiff clay soil not more than three hundred yards from tide water and sowed Reward and Garnet wheats, Alaska and Gopher oats and Trebi barley on June 2. The season was dry and growth was slow. No variety attained a greater length than 16 inches and miniature heads developed. All rows were harvested about the middle of September and before the first hard frost on the 21st. What kernels were in the heads showed no indication of frost and Reward wheat was plump enough to grade No. 2 or No. 3 Northern, but it was greenish in colour. Samples of wheat, oats, barley and fall rye which had seeded accidentally from railway cars and feed, along the right-of-way some distance south of the town site grew straw 30 to 40 inches tall and the barley and oats ripened normal samples before cutting about the 20th of September. The wheat and rye were quite green.

FODDER AND GARDEN CROPS

Western rye grass, timothy, meadow fescue and red clovers have been grown with complete success as far north as Mile 279.

All short season vegetables did well in 1930 north to Mile 279. In fact at Pikwitonei an extensive vegetable garden produced a large crop of potatoes and ripened tomatoes in the open. At Gillam, which is Mile 327, lettuce, radish

and onions are about the only crops which have been satisfactory in open garden conditions. Hot bed and semi-hot frame conditions appear to be essential here for the culture of other vegetables. At Churchill, lettuce, onions, radish and potatoes were tried in the open. On August 18, lettuce was just approaching usefulness and what few radish had survived were then an ideal size for use. Five pounds of Bovee potatoes were planted in early June. These were frozen several times during the summer and in September, when dug, the tubers were few and about the size of plums. It should be pointed out that soil on which these trials were made at Churchill was a shallow whitish clay on top of sea bottom gravel and that the influence of the salt water so near provided a very unusual and difficult environment for garden as well as other cultivated crops.

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