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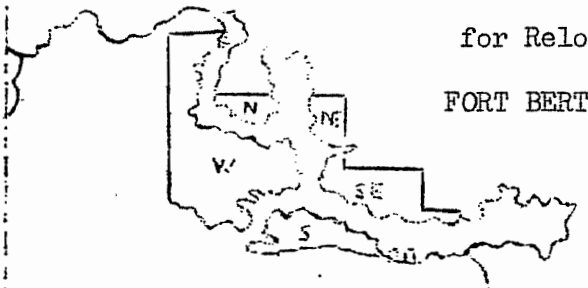
FARM AND RANCH BUDGETS

for Relocating Families in the

FORT BERTHOLD INDIAN RESERVATION



N.D.

By

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FARM AND RANCH BUDGETS FOR RELOCATING FAMILIES IN THE FORT BERTHOLD INDIAN RESERVATION

By L. W. Schaffner 1/

Introduction

The Fort Berthold Indian Reservation is a block of almost completely Indian-owned land, lying on both sides of the Missouri River in western North Dakota. The reservation starts about twenty miles northwest of the Garrison Dam site and extends northwest along both sides of the Missouri River to the town of Sanish. It was set up in 1851 by a treaty with the United States Government at Fort Laramie, Wyoming. The Indians on the Fort Berthold Reservation are made up of three tribes, the Arikara, Mandan, and Gros Ventre Indians. The original acreage in the reservation as set up in the Fort Laramie treaty was 12.5 million acres. As years went by, the area was reduced to 579,818 acres. The Garrison Dam will further reduce the present acreage to 426,413 acres.

Construction of the Garrison Dam is presenting many problems for the people of the Fort Berthold Reservation. It will not only reduce the acreage in the reservation by 156,035 acres, but will divide their land into five segments, separated from each other by the water in the pool of the dam and requiring the relocation of 300 Indian families.

The Indians have centered their living and agriculture in the valley on both sides of the Missouri River. The valley provided winter feed and shelter for livestock, and fuel, food, shelter, and game for the people. Since it is the valley lands that are to be flooded, the Indians are forced to move to the uplands, where they will have to adjust their way of life and agriculture to meet the new conditions. The Indians made very little use of the uplands, and a good share of the upland area has been leased out to non-Indian operators.

The basic economy of the Indian people today is the production of beef cattle. About sixty percent of the families own cattle, but less than two percent own herds of sufficient size to earn incomes that provide an adequate level of living. The second important source of income comes from the leasing of range and cropland to non-Indian operators.

1/ Assistant Agricultural Economist, North Dakota Agricultural Experiment Station. -- The author acknowledges valuable criticism from Rainer Schickele, C. B. Haver, and the other staff members of the Agricultural Economics department; Harry Anderson, North Dakota Extension Service; and Rex Quinn, Clyde Pensoneau, and other staff members of the Bureau of Indian Affairs.

In the relocation of Indian families every effort is being made by the agencies involved to see that the standard of living is improved. For example, plans are made to reshuffle the entire land ownership pattern in order to work out economic farm units. In this connection, the Bureau of Indian Affairs asked the North Dakota Agricultural College to prepare some farm budgets to assist in the development of plans for the relocation. It was necessary to develop various sets of alternative budgets based upon land use capabilities, family characteristics, capital requirements, and related factors. The purpose of these farm budgets is to help the Indians of the Fort Berthold Reservation to:

1, get some idea of the probable results from using various farm enterprises or combinations of enterprises on various size-of-farm units;

2, find out how much capital is required for land, buildings and improvements, machinery and equipment, livestock, and cash operating and maintenance expenses;

3, determine the probable labor and equipment requirements for the various size-of-farm units.

Land Resources

Most of the land remaining in the reservation after the reservoir site is evacuated is owned by the Indians individually, and some of it by the tribe. Table 1 shows the total acres and the percentage of crop and grazing land in each of the five segments.

Table 1. Total Acreage and Percentage of Crop and Grazing Land in Each of the Five Segments, Ft. Berthold Reservation 1/

Segment	Indian-Owned Acreage	Percent Cropland	Percent Grazing Land
Northern	19,860	21	79
Northeastern	21,432	53	47
Southeastern	67,378	27	73
Southern	74,498	6	94
Western	243,245	1	99
Total	426,413	10	90

1/ Missouri River Basin Investigations Staff. Social and Economic Report on the Future of Fort Berthold Reservation, North Dakota. Region No. 2. Bureau of Indian Affairs, Billings, Montana. January 15, 1948. p 25.

The main farm enterprise for this area is ranching, since 90% of the total area is grazing land. This also limits the types of alternative farm enterprises that are feasible. The ranching enterprise is now carried on mainly in the central part of the reservation on both sides of the Missouri River. Flooding of the reservoir will eliminate all of this choice range, except along the upper drainages and in the badlands.

Of the 370 Indian families in the reservation, 236 owned some livestock in 1946, which utilized about 43% of the grazing land on the reservation. Table 2 shows the size of herds owned by these Indian families in 1946 and January 1, 1952. The figures indicate that the size of the herd has been increased very little and fewer families reported owning beef cattle in 1952.

Table 2. Number of Beef Cattle Owned by Indian Families, 1946 and 1952.

Number of Cattle	Number of Families			
	1946 1/		Jan. 1, 1952 2/	
	Number	Percent	Number	Percent
1 - 20	88	37	58	33
21 - 50	99	42	81	47
51 - 99	43	18	29	17
100 - more	6	3	6	3
Total	236	100	174	100

1/ Missouri River Investigations Staff. Social and Economic Report on the Future of Fort Berthold Reservation, North Dakota. Bureau of Indian Affairs, Region No. 2. Billings, Montana. Jan. 1948. p. 17.

2/ Taken from the 1951 Annual Extension Report prepared by Clyde W. Pensoneau, Agricultural Extension Agent of the Indian Service.

Of the cropland on the reservation, about 72% is leased to non-Indian operators. The Indians farm about 12,000 acres, raising primarily wheat, barley, and flax.

Farm Budgets

A farm budget is a definite plan for the operation of a farm. To be most useful, the plan must be based upon the resources potentially available to the farm operator. The foundation of a farm budget is largely a

physical one and is made out in terms of acres of various crops, anticipated yields, numbers of livestock, feed requirements, and the disposition of crop and livestock products. Many assumptions have to be made on future expenses and prices received. Therefore, the budget is only as accurate as the assumptions used. The yields used are generally the yield that farmers in an area expect to get if weather and growing conditions are normal. The results of a budget may be higher or lower than what is actually achieved, but over a period of years the results should average about as indicated in the budget. The budget does give a farm operator some idea of what farm income he can expect if he follows a type of farm organization similar to the type worked out in the farm budget. Also, a farm budget is a tool by which a farmer can compare alternative farm enterprises and see which would be the most profitable for his available resources.

In this study three main farm types have been worked out in budget form: ranching, livestock-grain farming, and straight grain farming. For each of these types, budgets have been prepared for various sizes of farms and types of tenure. Other combinations and types of enterprises would be possible for this area, such as dairying or hogs. After studying the interests and capabilities of these Indian families it was thought best to confine the analysis to the three types chosen.

The assumptions used in these budgets were, in the main, taken from actual experience and practices of those already farming on the reservation. Other assumptions were taken from studies in the surrounding areas.

The prices and cost rates used in the budgets are for 1949. The future relationships between farm prices and farm costs may be less favorable in some years and more favorable in others. The 1949 indices of North Dakota farm prices received and of United States prices paid were about 244% and 250% respectively, making a parity ratio of 98. If employment continues at its present high level, the 98 parity ratio may not be too far out of line for the next few years.

The total asset structure as used in the budgets includes the investment in land, buildings and improvements, livestock, machinery and equipment. The total farm income includes all of the income from the sale of livestock and grains plus a value for the things the farm furnished the family, i.e. garden, meat, etc. The rental value of the farm dwelling was excluded. The total farm expenditure includes all the cash operating costs, cash maintenance expenditures, plus non-cash costs such as building and machinery depreciation and room and board for hired labor. It does not include interest charges on investment. The net farm income is the difference between the total farm income and total farm expenditure. This is the return to all farm investments - land, equipment, buildings, livestock, and to the operator and his family for their labor and management. If the farmer is free of debt, the net farm income would be available to him and his family for living expense and reinvestment in the farm. The return to operator and family labor is what remains after an interest charge has been made for the land, buildings and improvements, livestock and equipment. This is what he would have available for living and investing if he borrowed

or rented all the farm assets. The actual disposable income of most operators would probably fall someplace between the "net farm income" and the "return to operator and family labor".

Table 3 summarizes the total structural assets, net farm income and the return to operator and family labor for all the budgets. This table gives a bird's-eye view of the investment or capital requirement necessary for the type of farm, size of farm and type of tenure, and what one may expect in net farm income and return to the operator and his family for their labor.

Ranch Budgets

The ranch budgets will probably be the most widely used, because the majority of the land is suitable only for this purpose and ranching is the enterprise in which these families have the most interest and experience.

Ranch budgets have been worked out for 25-, 50-, 100- and 150-cow herds. These budgets give the families some idea of the capital, land, and labor requirements that would be necessary to provide the level of living associated with these various sizes. No minimum size of unit can be established that will meet all families' requirements, since families vary so much in the size and standard of living desired. An economical unit should be of a size to give the family an adequate level of living and still allow some capital accumulation.

Extreme variations in weather is an outstanding problem of ranchers in this area. The impact of drought is probably not as great on the reservation as outside, because controlled grazing is practiced. The Bureau of Indian Affairs requires pastures to be stocked at a rate of not to exceed one animal unit to 25 acres. No forced liquidation of cattle occurred during the drought years of the thirties on the reservation, while in the area surrounding the reservation many operators were compelled to cut down their livestock numbers to a point where it took seven or eight years to replace a breeding herd. 1/ The carrying capacity of one animal unit to 25 acres was followed in the budgets. Livestock men have learned that a reserve supply of feed is a good protection against these extreme variations in weather.

For a rancher to produce efficiently, the size of the calf crop plays an important part. The ranch budgets assume an average calf crop of 70% calves weaned. This is a conservative figure, as ranchers in this area report 80% as a long-time average or normal calf crop weaned. 2/

1/ Johnson, M. B. Range Cattle Production in Western North Dakota. Bulletin 347. North Dakota Agr. Exp. Sta. and Bureau of Agricultural Economics, USDA, cooperating. July 1947. p. 18.

2/ Ibid., p. 41

Table 3. Farm Budget Summaries, Fort Berthold Reservation

(at 1949 Prices)

Budget Number			Owner	Part Owner 1/	Tenant
	A. Total Structural Assets (rounded to nearest $100)				
1	150-Cow Ranch	Yrlgs.	$96,400	59,200	44,400
2	100-Cow Ranch	Yrlgs.	70,000	45,100	31,600
3	100-Cow Ranch	Calves	55,200	---	---
4	50-Cow Ranch	Yrlgs.	40,500	28,800	18,400
5	25-Cow Ranch	Yrlgs.	23,400	---	---
6 2/	50-Cow Herd & 225 a. cropl.	Yrlgs.	54,800	39,400	24,400
7 2/	50-Cow Herd & 225 a. cropl.	Calves	46,600	---	---
8 3/	50-Cow Herd & 225 a. cropl.	Yrlgs.	55,100	39,600	24,700
9	25-Cow Herd & 336 a. cropl.	Yrlgs.	45,000	32,800	18,000
10 2/	2,080-acre grain farm	---	97,600	49,200	25,400
11 2/	800-acre grain farm	---	45,700	32,500	12,200
12 2/	480-acre grain farm	---	30,800	26,400	8,600
	B. Net Farm Income (rounded to nearest $50)				
1	150-Cow Ranch	Yrlgs.	$ 9,850	8,150	7,300
2	100-Cow Ranch	Yrlgs.	6,300	5,200	4,450
3	100-Cow Ranch	Calves	4,600	---	---
4	50-Cow Ranch	Yrlgs.	2,750	2,250	1,700
5	25-Cow Ranch	Yrlgs.	1,300	---	---
6	50-Cow Herd & 225 a. cropl.	Yrlgs.	3,950	3,100	2,100
7	50-Cow Herd & 225 a. cropl.	Calves	3,100	---	---
8	50-Cow Herd & 225 a. cropl.	Yrlgs.	3,000	2,150	1,250
9	25-Cow Herd & 336 a. cropl.	Yrlgs.	3,300	2,350	1,450
10	2,080-acre grain farm	---	8,500	4,150	2,750
11	800-acre grain farm	---	3,450	2,250	1,000
12	480-acre grain farm	---	1,950	1,550	400
	C. Return to Operator and Family Labor (rounded to nearest $50)				
1	150-Cow Ranch	Yrlgs.	$ 5,100	4,900	4,650
2	100-Cow Ranch	Yrlgs.	2,850	2,750	2,550
3	100-Cow Ranch	Calves	1,850	---	---
4	50-Cow Ranch	Yrlgs.	750	700	600
5	25-Cow Ranch	Yrlgs.	100	---	---
6	50-Cow Herd & 225 a. cropl.	Yrlgs.	1,250	1,000	600
7	50-Cow Herd & 225 a. cropl.	Calves	800	---	---
8	50-Cow Herd & 225 a. cropl.	Yrlgs.	300	50	-250
9	25-Cow Herd & 336 a. cropl.	Yrlgs.	1,150	650	350
10	2,080-acre grain farm	---	4,050	1,650	1,200
11	800-acre grain farm	---	1,400	700	300
12	480-acre grain farm	---	550	350	-100

1/ The part-owner budgets were made on the assumption that the buildings would be on the owned land and the operator would own 320 acres.
2/ A wheat and fallow rotation was followed on the cropland.
3/ A wheat, oat and fallow rotation was used on the cropland with 40 acres of oats being cut for hay.

Prices of new machinery and equipment were assumed in the budgets. This investment could be reduced by the use of second-hand machines and by owning some machines jointly with neighbors or relatives. It was assumed that the ranches and farms would be fully mechanized. Also, the budgets were worked out on the basis that only the operator's labor would be available for farm work and the rest hired. When other family labor is available this item of expense could be reduced.

Table 4 gives a summary of the ranch budgets by size of ranch and type of tenure. The more detailed budget for each of the size and tenure groups may be found in the Appendix, along with a statement of the assumptions used in the construction of the budgets.

The ranch budgets are worked out on the basis of selling cattle as yearlings, two budgets for selling cattle as calves. The ranch investment on a 100-cow ranch for calf sales was about $15,000 less, since the cattle and land inventory would not be as high. The return to operator and family labor was $1,000 less with selling calves than with selling yearlings. Many operators may feel that they could sacrifice the $1,000 rather than risk carrying these calves another year and investing more into feed. The advantage of selling as yearlings is that the ranch operations would be more flexible, in that the operator could sell as calves or hold them over until two years of age, depending on weather, pasture, and marketing conditions. He could sell calves if feed was scarce without having to deplete the breeding herd. Under a calf-sale system, the breeding herd would have to be partially sold if short-feed conditions prevailed for several consecutive years.

In some budgets, the tenant income compares quite favorably with owner-operator income. The reason for this, in the ranch budgets, is that the rent of 25¢ per acre for grazing and hay land is cheaper than what it might be at the present price level of land, and therefore it may be more economical to rent than to own the land. Also, in the part-owner budgets it was assumed that 320 acres would be owned and that the buildings would be on the owned land, and therefore costs are increased by the depreciation and upkeep plus interest on investment. In the tenant budgets, the operator was charged the annual cost of the buildings which the landlord ordinarily would carry. The 25-cent-per-acre rental rate assumed here does not reflect any building costs. Although buildings are not generally charged for explicitly in a rental agreement unless they are exceptionally good, in the case of the Fort Berthold situation it was felt justified to charge the tenant the annual cost (upkeep, depreciation, insurance, and interest on investment) since the buildings would all be new.

If one uses $2,400 (at 1949 prices) as the level of living for these families, then a 100-cow ranch would be about the minimum size of unit which would return this amount to the tenant and his family. If a family owned the farm and livestock unencumbered, they could maintain such a living level with a 50-cow herd, and the interest on investment could be used for family living.

Table 4. Ranch Budgets by Size of Ranch and Type of Tenure
Fort Berthold Indian Reservation
Budgets 1, 2, 3, 4, and 5

	BUDGET NO.1 150-Cow Ranch Yearling Sales			BUDGET NO.2 100-Cow Ranch Yearling Sales		
	Owner	Part-Owner	Tenant	Owner	Part-Owner	Tenant
	acres			acres		
Asset Structure						
Total Acres in Ranch	7,684	Same	Same	5,173	Same	Same
Grazing land:						
owned	7,100	236	---	4,775	236	---
leased	---	6,864	7,100	---	4,539	4,775
Hay land:						
owned	568	68	---	382	68	---
leased	---	500	568	---	314	382
Farmstead:						
owned	16	Same	---	16	Same	---
leased	---	---	16	---	---	16
	dollars			dollars		
Total Structural Assets						
Land	36,566	1,678	---	24,616	1,678	---
Buildings & improvements	15,430	13,108	---	13,740	11,840	---
Livestock	38,953	Same	Same	26,146	Same	Same
Machinery	5,476	Same	Same	5,476	Same	Same
Total	96,425	59,215	44,429	69,978	45,140	31,622
Expenditure Structure						
Cash operating expenditure	3,796	Same	Same	2,689	Same	Same
Cash maintenance "	590	2,350	3,591	530	1,677	2,786
Total cash "	4,386	6,146	7,387	3,219	4,366	5,475
Non-cash expenditure	1,101	1,031	638	900	843	488
Total Farm Expenditure	5,487	7,177	8,025	4,119	5,209	5,963
Income Structure						
Livestock sales	14,733	Same	Same	9,812	Same	Same
Farm perquisites	600	Same	Same	600	Same	Same
Total Farm Income	15,333	Same	Same	10,412	Same	Same
Financial Summary						
Total farm income	15,333	Same	Same	10,412	Same	Same
Total farm expenditure	5,487	7,177	8,025	4,119	5,209	5,963
Net Farm Income	9,846	8,156	7,308	6,293	5,203	4,449
Interest on investment	4,746	3,257	2,666	3,431	2,438	1,897
Ret. to op. & fam. labor	5,100	4,899	4,642	2,862	2,765	2,552

Table 4 continued

BUDGET NO.3 100-Cow Ranch Calf Sales	BUDGET NO.4 50-Cow Ranch Yearling Sales			BUDGET NO.5 25-Cow Ranch Yearling Sales
Owner	Owner	Part-Owner	Tenant	Owner
acres	acres			acres
3,283	2,580	Same	Same	1,335
3,025	2,375	237	---	1,225
---	---	2,138	2,375	---
242	190	68	---	100
---	---	122	190	---
16	15	Same	---	10
---	---	---	15	---
dollars	dollars			dollars
15,584	12,275	1,678	---	6,358
13,318	9,800	8,744	---	5,000
20,829	13,009	Same	Same	6,653
Same	5,376	Same	Same	5,351
55,207	40,460	28,807	18,385	23,362
2,183	1,584	Same	Same	1,039
516	378	906	1,709	210
2,699	1,962	2,490	3,293	1,249
803	656	624	362	491
3,502	2,618	3,114	3,655	1,740
7,489	4,748	Same	Same	2,432
Same	600	Same	Same	Same
8,089	5,348	Same	Same	3,032
8,089	5,348	Same	Same	3,032
3,502	2,618	3,114	3,655	1,740
4,587	2,730	2,234	1,693	1,292
2,734	1,986	1,520	1,103	1,174
1,853	744	714	590	118

A 150-cow ranch (Budget No. 1) would need an investment of between $44,000 and $96,000 depending on the tenure status. The net farm income would range between $7,300 and $9,800. The return to operator and family labor would be around $4,600 and $5,100. It could be assumed that when an Indian family reached this level it would be in a position to compete with non-Indian operators, would be able to pay taxes, etc., in other words, have the management ability and an economic unit to be on their own and independent of the reservation. The ranch would require the full time of the operator and about 6 months of hired labor or an equivalent of family labor.

A 100-cow ranch (Budget No. 2) would need an investment of between $32,000 and $70,000 depending on the tenure status. The net farm income would range from $4,400 to $6,300. The return to operator and family labor would be from $2,600 to $2,800. This size of ranch would require the full time of the operator and about three months of hired labor during calving, haying, and fall round-up.

In order to have a 50-cow ranch (Budget No. 4) debt free, an Indian family would need to have $40,000 if the land, livestock and equipment were owned and $18,000 if it just owned the livestock and equipment and rented the land. This would be the minimum that a family could get by with and still maintain around $2,400 for family living. The net farm income would range from $1,700 to $2,800. The return to operator and family labor would range from $600 to $800. The interest on investment would need to be used to maintain the living level, and therefore a operator would have to own all the assets to do this. The operator could take care of this size of ranch by himself except for some extra help during haying, and would have some time for part-time work off the farm.

With a 25-cow herd (Budget No. 5) a family would have to have other income to support it. A farm operator with less than 50 head of cattle would have time to devote to other jobs off the farm the year round.

Grain-Livestock Farm Budgets

The following types of budgets (Table 5) were worked out for the grain-livestock type of farm. In Budget No. 6, with a 50-cow herd and 225 acres of cropland, the cattle were sold as yearlings and a wheat-fallow rotation was followed on the cropland. In Budget No. 7 with a 50-cow herd and 225 acres of cropland, the cattle were sold as calves and a wheat-fallow rotation was followed on the cropland. In Budget No. 8 with a 50-cow herd and 225 acres of cropland, the cattle were sold as yearlings and a wheat-oat-fallow rotation was followed on the cropland with 40 acres of the oats being cut for hay. In Budget No. 9 with a 25-cow herd and 336 acres of cropland, the cattle were sold as yearlings and a wheat-fallow rotation was followed on the cropland.

Table 5. Budgets for Grain-Livestock Type of Farm
Fort Berthold Indian Reservation
Budgets 6, 7, 8, and 9

	BUDGET NO.6 50 Cows, 225A.Crpld.[1] Yearling Sales			BUDGET NO.7 50 Cows, 225A.Crpld.[1] Calf Sales
	Owner	Part-Owner	Tenant	Owner
	acres			acres
Asset Structure				
Total Acres in Farm	2,800	Same	Same	1,855
Grazing land: owned	2,375	170	---	1,500
leased	---	2,205	2,375	---
Hay land: owned	190	34	---	120
leased	---	156	190	---
Cropland: owned	225	106	---	225
leased	---	119	225	---
Farmstead: owned	10	10	---	10
leased	---	---	10	---
	dollars			dollars
Total Structural Assets				
Land	18,440	3,997	---	13,943
Buildings & improvements	12,000	10,944	---	10,944
Livestock	13,009	Same	Same	10,299
Machinery	11,401	Same	Same	Same
Total	54,850	39,351	24,410	46,587
Expenditure Structure				
Cash operating expenditure	2,542	Same	Same	2,335
Cash maintenance expenditure	470	1,366	2,696	433
Total cash expenditure	3,012	3,908	5,238	2,768
Non-cash expenditure	1,357	1,325	997	1,288
Total Farm Expenditure	4,369	5,233	6,235	4,056
Income Structure				
Livestock sales	4,748	Same	Same	3,606
Grain sales	2,968	Same	Same	Same
Farm perquisites	600	Same	Same	Same
Total Farm Income	8,316	Same	Same	7,174
Financial Summary				
Total farm income	8,316	Same	Same	7,174
Total farm expenditure	4,369	5,233	6,235	4,056
Net Farm Income	3,947	3,083	2,081	3,118
Interest on investment	2,683	2,063	1,465	2,297
Ret. to operator & family	1,264	1,020	616	821

1/ Wheat-fallow crop system; 13 bu. per acre wheat yield.

Table 5 continued

BUDGET NO.8 50 Cows, 225A.Crpld.2/ Yearling Sales			BUDGET NO.9 25 Cows, 336A.Crpld.1/ Yearling Sales		
Owner	Part-Owner	Tenant	Owner	Part-Owner	Tenant
acres			acres		
2,800	Same	Same	1,621	Same	Same
2,375	170	---	1,175	170	---
---	2,205	2,375	---	1,005	1,175
190	34	---	100	34	---
---	156	190	---	66	100
225	106	---	336	106	---
---	119	225	---	230	336
10	Same	---	10	10	---
---	---	10	---	---	10
dollars			dollars		
18,440	3,997	---	15,372	3,997	---
12,000	10,944	---	11,577	10,732	---
13,009	Same	Same	6,653	Same	Same
11,696	Same	Same	11,376	Same	Same
55,145	39,646	24,705	44,978	32,758	18,029
2,634	Same	Same	2,388	Same	Same
470	1,367	2,598	455	1,452	2,694
3,104	4,001	5,232	2,843	3,840	5,082
1,419	1,387	1,059	1,305	1,280	958
4,523	5,388	6,291	4,148	5,120	6,040
4,748	Same	Same	2,432	Same	Same
2,177	Same	Same	4,434	Same	Same
600	Same	Same	600	Same	Same
7,525	Same	Same	7,466	Same	Same
7,525	Same	Same	7,466	Same	Same
4,523	5,388	6,291	4,148	5,120	6,040
3,002	2,137	1,234	3,318	2,346	1,426
2,700	2,080	1,482	2,160	1,671	1,082
302	57	-248	1,158	675	344

2/ Three-year rotation, wheat-oats-fallow, on cropland; 40 acres of oats used for hay; yields of 12 bu/acre for wheat, 20 bu/acre for oats.

A budget was included in which there was some feed grain on the cropland which could be used either for grain or for hay. This is a common practice on the reservation now where the farm has some cropland along with the grazing land.

A farm with a 50-cow herd and 225 acres of cropland (Budgets No. 6 and 8) would require an investment from $24,000 to $55,000 depending on the type of tenure. The net farm income differs with the type of farm organization. In Budget No. 6, the cattle were sold as yearlings and a wheat-fallow rotation was followed on the cropland. The net farm income in this budget ranges from $2,100 to $3,900. In Budget No. 8, the cattle were sold as yearlings and a wheat-oat-fallow rotation was followed on the cropland with 40 acres of oats being cut for hay. The net farm income in this budget ranges from $1,200 to $3,000. The return to operator and family labor in these two budgets ranges from $600 to $1,300 in Budget No. 6 and from $248 to $300 in Budget No. 8. This type and size of farm would require the full time of the operator, with a little over a month of hired labor during haying and harvesting.

Budget No. 7 was the same as Budget No. 6 except that the cattle were sold as calves instead of as yearlings. The investment in livestock is about $3,000 less when cattle are sold as calves. There is also less investment in range and hay land with a calf-sale type of livestock organization. The return to operator and family labor is about $500 less with this size of herd and selling as calves.

The 25-cow herd and 336 acres of cropland (Budget No. 9) type of farm requires a farm investment of between $18,000 and $45,000 depending upon the type of tenure. The net farm income ranges from $1,400 to $3,300. The return to operator and family labor ranges between $300 and $1,200. The operator would have some spare time during the winter months, October to March. The summer months would require the operator's time plus about a month of hired labor.

Grain Farm Budgets

Table 6 gives summaries for grain farms of 2,080 acres, 800 acres, and 480 acres. In these budgets it was assumed that 75% of the total farm acreage would be cropland. The wheat-fallow rotation was used. The yields used were 60% of the Mandan Station yields for a wheat-fallow rotation for the period 1914-1948.

The 2,080-acre budget (Budget No. 10) was set up to be comparable to the 150-cow ranch budget. The owner budgets are the most comparable since their total investment is about the same. The part-owner and tenant budgets for this size of grain farm have less investment than the same type of tenure in the 150-cow ranch budgets, due to the fact that the investment in livestock is greater than the investment in the machinery necessary to operate a grain farm.

The total investment in the 2,080-acre grain farm ranged from $25,000 to $98,000 depending upon the type of tenure. The net farm income ranges from $2,700 to $8,500. The return to operator and family labor ranges from $1,200 to $4,100. The labor requirements for a farm of this size would not meet the requirements of a family farm. The operator would put in 1,742 hours, while there would be 2,964 hours of hired labor. This is assuming that the only family labor available would be that of the operator himself.

The 800-acre grain farm (Budget No. 11) would require an investment of from $12,000 to $46,000 depending upon the type of tenure. The net farm income ranges from $1,000 to $3,500, and the return to operator and family labor ranges from $300 to $1,400. The labor requirements for these grain farms would come in the spring and summer months. The operator would have the winter months to repair machinery. About a month of hired labor would be needed on this size of grain farm.

The 480-acre grain farm budget (Budget No. 12) shows that a family would have less than $2,000 for family living if all the assets were owned free of debt. The return to operator and family labor ranges from $100 to $550.

Effect of Yield Variations Over Time

One thing these farm budgets do not show is the variation in farm income over time due to variations in yields and prices. Variation in yields have had the largest effect on farm income, especially since prices have been supported.

Table 7 shows how incomes vary over time when everything is held constant except the yields. The budget used in this example was a typical farm in central North Dakota. This farm has a total land acreage of 535 acres of which 383 acres was cropland. There were 26 head of cattle kept. In this budget, prices assumed for individual farm products have the relationship to each other that prevailed in 1949. The prices paid were reduced to make a parity ratio of 85. The net income in this budget is the deduction of all farm expenses, including capital depreciation and federal income taxes. It is comparable to the net farm income in the Fort Berthold budgets except for the federal income tax which has not been deducted in the latter. Table 7 will give the reader some idea on how the net incomes vary from the average as set up in an ordinary budget. The farm organization and general level of income corresponds roughly to Budget No. 6 or 9.

Table 6. Grain Farm Budgets
Fort Berthold Indian Reservation
Budgets 10, 11, and 12

	BUDGET NO.10 2,080-Acre Grain Farm 1/			BUDGET NO.11 800-Acre Grain Farm 1/		
	Owner	Part-Owner	Tenant	Owner	Part-Owner	Tenant
	acres			acres		
Asset Structure						
Total Acres in Farm	2,080	Same	Same	800	Same	Same
Cropland: owned	1,560	240	---	600	240	---
leased	---	1,320	1,560	---	360	600
Other: owned	520	80	---	200	80	---
leased	---	440	520	---	120	200
	dollars			dollars		
Total Structural Assets						
Land	57,200	8,800	---	22,000	8,800	---
Bldgs. & Improvemts.	15,000	Same	---	11,500	Same	---
Machinery	25,355	Same	Same	12,213	Same	Same
Total	97,555	49,155	25,355	45,713	32,513	12,213
Expenditure Structure						
Cash operating expend.	8,582	Same	Same	2,878	Same	Same
Cash maintenance "	575	4,929	6,771	452	1,640	3,236
Total cash "	9,157	13,511	15,353	3,330	4,518	6,114
Non-cash expenditure	3,247	Same	2,796	1,425	Same	1,080
Total Farm Expenditure	12,404	16,758	18,149	4,755	5,943	7,194
Income Structure						
Grain sales	20,584	Same	Same	7,917	Same	Same
Farm perquisites	300	Same	Same	300	Same	Same
Total Farm Income	20,884	Same	Same	8,217	Same	Same
Financial Summary						
Total farm income	20,884	Same	Same	8,217	Same	Same
Total farm expenditure	12,404	16,758	18,149	4,755	5,943	7,194
Net Farm Income	8,480	4,126	2,735	3,462	2,274	1,023
Interest on investment	4,409	2,473	1,521	2,073	1,545	733
Ret. to op. & fam. labor	4,071	1,653	1,214	1,389	729	290

1/ Wheat-fallow crop system, 13 bu./acre wheat yield.

Table 6 continued

BUDGET NO.12 480-Acre Grain Farm[1/]		
Owner	Part-Owner	Tenant
acres		
480	Same	Same
360	240	---
---	120	360
120	80	---
---	40	120
dollars		
13,200	8,800	---
9,000	Same	---
8,559	Same	Same
30,759	26,359	8,559
1,812	Same	Same
350	746	2,168
2,162	2,558	3,980
934	Same	664
3,096	3,492	4,644
4,750	Same	Same
300	Same	Same
5,050	Same	Same
5,050	Same	Same
3,096	3,492	4,644
1,954	1,558	406
1,402	1,226	514
552	332	-108

Table 7. Net Income For a Typical Central North Dakota Wheat Farm Under Three Types of Operators, Constant Prices and Varying Yield. 1/

Year	Net Income After Tax: Debt free owner-operator	Encumbered 2/ owner-operator	Tenant operator
1914	$8,126	$8,126	$5,973
1915	8,874	8,415	6,514
1916	4,469	3,962	3,459
1917	2,862	2,324	2,339
1918	2,427	1,855	2,026
1919	1,482	910	1,396
1920	938	365	1,033
1921	- 523	-1,095	59
1922	5,144	4,641	3,949
1923	3,316	2,802	2,693
1924	4,976	4,471	3,808
1925	4,143	3,627	3,244
1926	2,682	2,112	2,199
1927	5,481	4,970	4,154
1928	4,754	4,239	3,656
1929	3,241	2,718	2,604
1930	2,265	1,693	1,920
1931	2,435	1,863	2,034
1932	5,471	4,951	4,147
1933	- 595	-1,167	14
1934	- 812	-1,385	- 134
1935	5,232	4,706	3,983
1936	- 981	-1,553	- 244
1937	1,042	470	1,105
1938	3,042	2,502	2,483
1939	3,913	3,372	3,090
1940	2,740	2,181	2,246
1941	5,476	4,933	4,151
1942	5,553	5,007	4,204
1943	4,130	3,577	3,234
1944	6,093	5,542	4,575
1945	6,037	5,480	4,536
1946	- 368	- 940	165
1947	4,756	4,182	3,650
1948	4,835	4,266	3,711
35-yr. average	$3,504	$2,975	$2,799
No. of years with deficits	5 yr.	5 yr.	2 yr.
Cumulative income	$122,656	$104,122	$97,976

1/ Thair, Philip J. Stabilizing Farm Income Against Crop Yield Fluctuations. Bulletin No. 362. North Dakota Agr. Expt. Sta. and Bureau of Agricultural Economics, U.S.D.A., cooperating. September 1950, p. 16.

2/ Payments of principal and interest on the mortgage have been deducted from net income figures according to the amortization schedule.

Adequate Finances

One of the most outstanding problems in getting these families relocated on economical farm units is obtaining adequate capital. This is the same problem that any young person faces who wishes to get started farming on his own and doesn't have help from the family. The one thing that will strike most people in looking over the budgets presented here is the large investment necessary, particularly in the owner-operator budgets. Before much planning can be done in relocating these families on farm units that will provide an adequate level of living, some program will have to be worked out to help finance them in obtaining these units. The present credit facilities, both private and government, would not meet the needs of the majority of these families.

The question arises, What effect will it have on these budgets if there is need for borrowing capital to get started? Let us assume that about all the assets most of these families would own will be the land that they have now and what money they might receive for having to move. Assume that a family now owns a section of land (640 acres) value at $3,000. If all the money paid to the tribe for the flooding of their land was paid on a per capita basis, each person would receive about $3,000. 1/ An average family of five members would then have $15,000 cash. The total assets that they own would have a value of about $18,000.

The 50-cow ranch (Budget No. 4) and the 50-cow and 225 acres of cropland (Budget No. 6) budgets will be used as an example to show how borrowing capital will affect the returns. The reason for choosing these two budgets was that in getting started the 50-cow ranch and 50 cows and 225 acres of cropland budgets would be more realistic. The type of loans used in this example would be similar to FHA loans. The real-estate loan would carry 4% interest and take 40 years to repay; the livestock loan, 5% interest and 7 years to repay. It was assumed that the capital owned would be used to pay down on real estate, to buy all the machinery, and the remainder towards livestock. Table 8 shows the capital needed, how capital owned now was used, amount of capital necessary to borrow, and the annual payment necessary to amortize the loan. The total investment here differs somewhat from the budget in that only capital to get breeding cattle and horses was used. In the budgets the livestock investment included the breeding herd, replacement stock, and calves being carried over to be sold as yearlings the next year. In Budget No. 4, 50-cow ranch, the family owned enough capital to buy all the machinery and livestock and pay 18% down on land and improvements. Only a real-estate loan was needed. If $17,900 were borrowed on the land and improvements, the annual repayment necessary to amortize the loan at 4% in 40 years would be $904. The net farm income for this type of farm would be $2,730, or including the loan payment, $1,826.

1/ This includes the $1,000 per capita payment made in August 1951.

In Budget No. 6, 50-cows and 225 acres/cropland, the family would own enough capital to buy all the machinery, pay 13% down on real estate, and pay 30% down on the livestock. A real-estate loan of $26,400 would be needed, plus a $5,900 loan on livestock. The annual payment necessary on these loans would be $2,354 for the first 7 years and $1,334 for the next 33 years. The net farm income for this budget would be $3,947, or if the loan payment was included, $1,593.

Table 8. Distribution of Finances for a 50-Cow Ranch and a 50-Cow and 225-Acre Cropland Farm.

Type of Investment	Capital Needed	Capital Owned	Capital Borrowed	Annual Payment Necessary to Amortize Loan
		50-Cow Ranch		
Land & Improv.	$22,000	$4,100	$17,900	$904
Livestock 1/	8,500	8,500	---	---
Machinery	5,400	5,400	---	---
Total	$35,900	$18,000	$17,900	$904
		50-Cow Herd & 225 Acres Cropland		
Land & Improv.	$30,400	$4,000	$26,400	$1,334
Livestock 1/	8,500	2,600	5,900	1,020
Machinery	11,400	11,400	---	---
Total	$50,300	$18,000	$32,300	$2,354

1/ Capital only for the purchase of 50 cows and 2 horses.

In the above examples no account was taken of the cash operating expenses. Since the example used was budgets which sold cattle as yearlings there would be no income to the family from the livestock enterprise the first year. The family would need to make some credit arrangements for carrying the cash operating expenses until the farm would be receiving income. This is particularly true for the ranch budgets. The interest on this loan would have to be deducted from the net farm income until it was paid.

The examples presented above assumed that the capital borrowed would all be obtained through a loan agency similar to FHA. In the 50-cow ranch budget, let us assume that most of the cattle would be obtained through the revolving cattle credit program. Assume that an operator used his $1,800 capital for obtaining machinery, 10 cows, and the remainder for land and improvements. With this assumption he would need a real-estate loan of $11,425, of which the amortized repayment would be $577 per year

for 40 years. To bring his cattle numbers to 50 head he would borrow 40 yearling heifers through the revolving cattle credit program. Under this program he would have 8 years to repay the 40 yearling heifers in kind, plus one heifer for each 10 borrowed as interest. In the budgets, it was assumed that 8 heifers would be sold each year. Instead of selling these heifers they would be used to repay the heifers borrowed. It would be two years before the heifers borrowed would calve and three years before there would be any yearling heifers to start repaying the cattle loan. It would take six years to repay the livestock once the loan stock started producing, 8 yearling heifers the first five years and 4 the sixth year. If one converted animals to money value, the loan repayment the first five years would be $1,075 for livestock and $577 for real estate, or a total of $1,652. The sixth year the loan payment would be $538 for livestock and $577 for real estate, or a total of $1,115.

The annual loan payments under the above assumptions are, of course, higher than in the first example because real-estate loans may be obtained at a lower rate of interest and much longer time to repay. A family may feel that it would be to their advantage to have a smaller real-estate loan and have a high livestock loan of a type which they may pay in kind.

APPENDIX

Assumptions Used in Budgets

Land Use System

Grazing land was determined at the rate of 25 acres for each animal unit. A cow and calf was considered one animal unit. All livestock over one year of age was considered as an animal unit.

Hay land was figured at the rate of one ton of hay for each animal unit and a yield of ½ ton per acre.

Seventy-five per cent of the land in grain farms was cultivated.

Crop Yields

A wheat and fallow crop system was used in all the budgets but one. In this one budget a wheat, oat and fallow rotation was used to give some idea of the results of using part of the oat crop as forage for livestock. The crop yields used were 60% of the 1914-1948 average Mandan Station yield for the rotation used, and was based on the yields that the farmers in the area were actually getting in comparison to the Mandan yield. The yield for wheat with a wheat-fallow rotation was 13 bushels per acre and for a wheat-oat-fallow rotation it was 12 bushels per acre. The yield for oats was 20 bushels per acre.

Livestock

It was assumed that a 70% calf crop could be weaned. A 3% death loss was figured for all livestock after the weaning stage.

Value of Land

	Dollars per acre
Cropland	$27.50
Grazing land	4.50
Hay land	8.00

These land values were what the land appraisers with the Indian service appraised the land at.

Labor Requirements

	Man-hours per acre
Wheat and oats	3.5
Summer fallow*	2.2
Wild hay	2.1
Tame hay	4.6
Beef cows	15.0
Other cattle	11.0

* Plowed and worked three times.

About a month's labor was allowed for the other general work around the farm.

Machinery and Equipment

It was assumed that these farms would be fully mechanized and that new machinery prices would be used. The prices used were the retail price of new machinery at Williston, North Dakota, for the spring of 1950.

Feed Requirements

The annual feed requirement per animal unit was one ton of hay (2,000 lbs.) and 90 pounds of protein supplement. The supplement was fed at the rate of one pound per day for 90 days during the winter feeding period.

Farm Expenses

Seed - No grain inventories were carried, so the cost of seed grain was valued at the market price. Seeding rate used was 1¼ bu/ac for wheat and 2 bu/ac for oats. Seed cleaning and treating was charged at the rate of 15¢ per bushel.

Protein supplement - $86 per ton.

Bulls - rented from the Association at $87.50 per bull and one bull for each 25 cows.

Cattle spraying - 21¢ per head.

Hired labor - The assumption was made that the operator's labor would be the only family labor used and all other labor hired. The hired labor wage used was $100 per month or $6.00 per day and board and room. A value of $2.30 per day was used for room and board.

Machine repair - 4% of the inventory value minus value of the truck.

Truck costs - Including fuel, grease, oil, repairs, insurance, license and depreciation, truck costs per mile are:

Miles annual use	½ Ton	1½ Ton
5,000	0.105	0.147
8,000	0.088	0.125
10,000	0.083	0.117
12,000	0.079	0.112
16,000	0.074	0.110

Fuel - the amount of gasoline used was based on the following rates:

Operation	Gallons per acre
Wheat (seeded on fallow). . . .	4.10
Oats on spring plowing.	4.42
Fallow.	5.28
Haying.	1.50

In the fuel costs allowance was made for other general farm work and the charge was 22¢ per gallon.

Upkeep on buildings and improvements - 3½% of inventory value.

Building and improvement depreciation - 3% of inventory value.

Machinery depreciation - 10% of inventory value minus value of truck.

Rented land - grazing and hay land was rented for 25¢ per acre. Cropland was rented for ¼ share to landlord. Operator furnished everything except the land.

Interest on real estate investment - 4% of inventory value.

Interest on machinery and livestock investment - 6% of inventory value.

Real estate and personal property taxes - real estate taxes were estimated at 34¢ per acre. The personal property taxes were assumed to be 1/3 of the real-estate taxes.

Income

All grain raised was sold. The price received was the 1949 prices received by North Dakota farmers - for wheat, $2.03 per bushel, and $.50 for oats.

To make the budgets more realistic, prices by classes of cattle were used. There are no North Dakota prices quoted for livestock by grades. To arrive at a price, the 1949 Sioux City price was used minus freight and handling charges. Since the price of steers was the only one listed at Sioux City, the assumption was made that among the other classes the same differential would exist at Sioux City as at Chicago. The prices by weights and classes are as follows:

	Price per cwt.	Weight in lbs. 1/
Cows (dry)	$17.38	1,050
Cows (mixed)	17.38	950
Yearling heifers	20.68	650
Yearling steers	21.66	700
Heifer calves	25.62	375
Steer calves	25.62	400

1/ Johnson, M. B. Range Cattle Production in Western North Dakota. Bulletin 347. N. Dak. Agr. Exp. Sta. and Bureau of Agricultural Economics, U.S.D.A. cooperating. July 1947. p. 31.

Appendix Table 1. Detailed Budgets for Ranches, Ft. Berthold I.R.*

	Budget No.1	Budget No.2	Budget No.3	Budget No.4	Budget No.5
Livestock Inventory					
Number of: Cows	150	100	100	50	25
Yearling heifers	25	17	17	8	4
Steer calves	53	35	-	18	9
Heifer calves	52	35	17	17	9
Horses	4	4	4	2	2
Value of: Cows	$24,766	$16,511	$16,511	$8,256	$4,128
Yearling heifers	3,360	2,285	2,285	1,075	538
Steer calves	5,431	3,587	-	1,845	922
Heifer calves	4,996	3,363	1,633	1,633	865
Horses	400	400	400	200	200
Total Value of Livestock	$38,953	$26,146	$20,829	$13,009	$6,653
Machinery & Equipment Inventory					
Tractor (2-plow)	$1,395	$1,395	$1,395	$1,395	$1,395
Mower (tractor)	270	270	270	270	270
Dump rake	120	120	120	120	120
Stacker	700	700	700	700	700
Wagons	165	165	165	165	165
Sled	126	126	126	126	126
Hay rack	100	100	100	100	100
Saddles	100	100	100	50	25
Harness	100	100	100	100	100
Truck, 1½-ton	2,100	2,100	2,100	2,100	2,100
Miscellaneous equipment	300	300	300	250	250
Total mach. & equipment	$5,476	$5,476	$5,476	$5,376	$5,351
Total Man-Hours	4,330	3,356	2,403	1,778	944
Operator	2,807	2,566	2,071	1,578	904
Hired	1,523	790	332	200	40
Expenditure Structure					
Cash Operating					
Protein supplement	$1,084	$731	$516	$361	$189
Bull rental	525	350	350	175	88
Spraying	59	40	28	20	10
Drugs	75	50	50	25	15
Labor	600	300	130	120	24
Gasoline, oil & grease	584	427	339	249	119
Machine repair	135	135	135	131	130
Truck costs	525	500	500	375	350
Salt	84	56	35	28	14
Miscellaneous	125	100	100	100	100
Total Cash Operating	$3,796	$2,689	$2,183	$1,584	$1,039
Cash Maintenance					
Insurance	$50	$50	$50	$35	$35
Upkeep on bldgs. & imprv.	540	480	466	343	175
Total Cash Maintenance					
Owner	$590	$530	$516	$378	$210
Part-owner	2,350	1,677	-	906	-
Tenant	3,591	2,786	-	1,709	-
Total Cash Expenditure					
Owner	$4,386	$3,219	$2,699	$1,962	$1,249
Part-owner	6,146	4,366	-	2,490	-
Tenant	7,387	5,475	-	3,293	-
Non-cash Expenditure					
Building depreciation	$463	$412	$400	$294	$150
Machinery depreciation	338	338	338	328	325
Room & bd. for hired lbr.	300	150	65	34	16

	Budget No.1	Budget No.2	Budget No.3	Budget No.4	Budget No.5
Total Non-cash Expenditure					
Owner	$1,101	$900	$803	$656	$491
Part-owner	1,031	843	-	624	-
Tenant	638	488	-	362	-
Total Farm Expenditure					
Owner	$5,487	$4,119	$3,502	$2,618	$1,740
Part-owner	7,177	5,209	-	3,114	-
Tenan	8,025	5,963	-	3,655	-
Gross Income Structure					
Livestock sales					
Number of livestock sold					
Cows	20	13	13	6	3
Yearling steers	51	34	-	17	8
Yearling heifers	25	17	-	8	5
Steer calves	-	-	34	-	-
Heifer calves	-	-	17	-	-
Value of livestock sold					
Cows	$3,650	$2,372	$2,372	$1,095	$547
Yearling steers	7,733	5,155	-	2,578	1,213
Yearling heifers	3,350	2,285	-	1,075	672
Steer calves	-	-	3,484	-	-
Heifer calves	-	-	1,633	-	-
Farm perquisites	600	600	600	600	600
Total Gross Income	$15,333	$10,412	$8,089	$5,348	$3,032
Net Farm Income					
Owner	$9,846	$6,293	$4,587	$2,730	$1,292
Part-owner	8,156	5,203	-	2,234	-
Tenant	7,308	4,449	-	1,693	-
Interest on investment					
Owner	$4,746	$3,431	$2,734	$1,986	$1,174
Part-owner	3,257	2,438	-	1,520	-
Tenant	2,666	1,897	-	1,103	-
Return to operator & family labor					
Owner	$5,100	$2,862	$1,853	$744	$118
Part-owner	4,899	2,765	-	714	-
Tenant	4,642	2,552	-	590	-
Percent return on investment					
Owner	7.7	5.6	4.0	0.8	-
Part-owner	9.7	6.2	-	-	-
Tenant	11.1	6.5	-	-	-
Land & Personal Property Taxes					
Owner	$3,475	$2,339	$1,484	$1,166	$604
Part-owner	971	689	-	1,057	-
Tenant	862	580	-	289	-

* Budget No.1 - 150-cow ranch selling cattle as yearlings.
Budget No.2 - 100-cow ranch selling cattle as yearlings.
Budget No.3 - 100-cow ranch selling cattle as calves.
Budget No.4 - 50-cow ranch selling cattle as yearlings.
Budget No.5 - 25-cow ranch selling cattle as yearlings.

Appendix Table 2. Detailed Budgets* for Grain-Livestock Farms, Ft. Berthold I.R.

	Budget #6	Budget #7	Budget #8	Budget #9
Livestock Inventory				
Number of: Cows	50	50	50	25
Yearling heifers	8	8	8	4
Steer calves	18	-	18	9
Heifer calves	17	8	17	9
Horses	2	2	2	2
Value of: Cows	$8,256	$8,256	$8,256	$4,128
Yearling heifers	1,075	1,075	1,075	538
Steer calves	1,845	-	1,845	922
Heifer calves	1,633	768	1,633	865
Horses	200	200	200	200
Total Value of Livestock	$13,009	$10,299	$13,009	$6,653
Machinery Inventory				
Tractor	$2,265	$2,265	$2,265	$2,265
Plow	385	385	385	385
Disc	280	280	280	280
Cultivator	340	340	340	340
Drill	775	775	775	775
Pony drill	-	-	295	-
Swather	725	725	725	725
Combine	1,975	1,975	1,975	1,975
Truck	2,100	2,100	2,100	2,100
Grain elevator	425	425	425	425
Mower	270	270	270	270
Dump rake	120	120	120	120
Stacker	700	700	700	700
Wagons	165	165	165	165
Hay rack	100	100	100	100
Sled	126	126	126	126
Saddle	50	50	50	25
Harness	100	100	100	100
Miscellaneous equipment	500	500	500	500
Total Machinery Inventory	$11,401	$11,401	$11,696	$11,376
Crop System				
Wheat, number of acres in	112.5	112.5	75	168
Oats, " " " "	-	-	75	-
Fallow, " " " "	112.5	112.5	75	168
Total Man-Hours	2,420	1,976	2,504	1,888
Operator	2,131	1,849	2,073	1,760
Hired	289	127	431	128
Expenditure Structure				
Cash Operating, Total	$2,542	$2,335	$2,634	$2,388
Protein supplement	361	258	361	189
Bull rental	175	175	175	88
Spraying	20	20	20	10
Drugs	25	20	25	15
Labor	174	78	258	78
Gasoline, oil & grease	480	480	480	565
Machine repair	372	372	384	371
Truck cost	500	500	500	500
Salt	28	25	28	14
Seed	286	286	266	426
Seed cleaning & treating	21	21	37	32
Miscellaneous	100	100	100	100
Cash Maintenance				
Insurance	$50	$50	$50	$50
Upkeep on bldgs. & imprv.	420	383	420	405
Leases, Rents for bldgs.&c.	-	-	-	-

	Budget #6	Budget #7	Budget #8	Budget #9
Total Cash Maintenance				
Owner	$470	$433	$470	$455
Part-owner	1,366	-	1,367	1,452
Tenant	2,696	-	2,598	2,694
Total Cash Expenditure				
Owner	$3,012	$2,768	$3,104	$2,843
Part-owner	3,908	-	4,001	3,840
Tenant	5,238	-	5,232	5,082
Non-cash expenditure				
Building depreciation	$360	$328	$360	$347
Machinery depreciation	930	930	960	928
Rm.& bd. for hired labor	67	30	99	30
Total Non-cash Expenditure				
Owner	$1,357	$1,288	$1,419	$1,305
Part-owner	1,325	-	1,387	1,280
Tenant	997	-	1,059	958
Total Farm Expenditure				
Owner	$4,369	$4,056	$4,523	$4,148
Part-owner	5,233	-	5,388	5,120
Tenant	6,235	-	6,291	6,040
Gross Income Structure				
Number of livestock sold				
Cows	6	6	6	3
Yearling steers	17	-	17	8
Yearling heifers	8	-	8	5
Steer calves	-	17	-	-
Heifer calves	-	8	-	-
Bushels of grain sold: Wheat	1,462	1,462	900	2,184
Oats	-	-	700	-
Value of livestock sold				
Cows	$1,095	$1,095	$1,095	$547
Yearling steers	2,578	-	2,578	1,213
Yearling heifers	1,075	-	1,075	672
Steer calves	-	1,742	-	-
Heifer calves	-	769	-	-
Value of grain sold: Wheat	$2,968	$2,968	$1,827	$4,434
Oats	-	-	350	-
Value of farm perquisites	600	600	600	600
Total Gross Farm Income	$8,316	$7,174	$7,525	$7,466
Net Farm Income: Owner	3,947	3,118	3,002	3,318
Part-owner	3,083	-	2,137	2,346
Tenant	2,081	-	1,234	1,426
Interest on Investment: Owner	2,683	2,297	2,700	2,160
Part-owner	2,063	-	2,080	1,671
Tenant	1,465	-	1,482	1,082
Return to Oper. & Fam. Labor				
Owner	$1,264	$821	$302	$1,158
Part-owner	1,020	-	57	675
Tenant	616	-	-248	344
Percent Return on Investment				
Owner	2.8	1.5	1.1	2.0
Part-owner	1.7	-	-	-
Tenant	1.7	-	-	-
Land & Pers. Prop. Taxes: Owner	$1,266	$1,266	$1,266	$733
Part-owner	423	-	423	291
Tenant	314	-	314	182

* See back of this page.

Appendix Table 2, footnotes

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* Budget No.6 - 50-cow herd and 225 acres of cropland with a wheat and fallow rotation and selling cattle as yearlings.

Budget No.7 - 50-cow herd and 225 acres of cropland with a wheat and fallow rotation and selling cattle as calves.

Budget No.8 - 50-cow herd and 225 acres of cropland with a wheat-oat-fallow rotation, with 40 acres of oats being cut for hay and selling cattle as yearlings.

Budget No.9 - 25-cow herd and 336 acres of cropland with a wheat and fallow rotation and selling cattle as yearlings.

Appendix Table 3. Detailed Budgets* for Grain Farms, Ft. Berthold I. R.

	Budget #10	Budget #11	Budget #12
Machinery Inventory			
Tractors	$7,500	$2,750	$1,850
Plows	1,380	538	284
Disc	700	280	280
Cultivator	1,100	340	310
Drill	1,320	775	635
Swather	1,600	725	725
Combine	6,480	3,780	1,975
Truck	4,200	2,100	1,725
Harrow	150	-	-
Grain elevator	425	425	425
Miscellaneous equipment	500	500	350
Total Value of Machinery	$25,355	$12,213	$8,559
Crop System			
Number of acres in wheat	780	300	180
" " " " fallow	780	300	180
Total Man-Hours	4,706	1,969	1,221
Operator	1,742	1,668	1,141
Hired	2,964	301	80
Expenditure Structure			
Cash Operating			
Labor	$1,776	$180	$48
Gasoline, oil & grease	2,000	876	515
Machine repair	846	405	258
Truck cost	1,470	500	400
Seed	2,132	761	457
Seed cleaning & treating	158	56	34
Miscellaneous	200	100	100
Total Cash Operating	$8,582	$2,878	$1,812
Cash Maintenance			
Insurance	$50	$50	$35
Upkeep on buildings & improvements	525	402	315
Leases	-	-	-
Rent for buildings & improvements	-	-	-
Total Cash Maintenance			
Owner	$575	$452	$350
Part-owner	4,929	1,640	746
Tenant	6,771	3,236	2,168
Total Cash Expenditure			
Owner	$9,157	$3,330	$2,162
Part-owner	13,511	4,518	2,558
Tenant	15,353	6,114	3,980

Appendix Table 3 continued

	Budget #10	Budget #11	Budget #12
Non-cash Expenditure			
Building depreciation	$450	$345	$270
Machinery depreciation	2,116	1,011	646
Room & board for hired labor	681	69	18
Total Non-cash Expenditure			
Owner	$3,247	$1,425	$934
Part-owner	3,247	1,425	934
Tenant	2,796	1,080	664
Total Farm Expenditure			
Owner	$12,404	$4,755	$3,096
Part-owner	16,758	5,943	3,492
Tenant	18,149	7,194	4,644
Gross Income Structure			
Number of bushels of wheat sold	10,140	3,900	2,340
Value of wheat sold	$20,584	$7,917	$4,750
Value of farm perquisites	$300	$300	$300
Total Gross Income	$20,884	$8,217	$5,050
Net Farm Income			
Owner	$8,480	$3,462	$1,954
Part-owner	4,126	2,274	1,558
Tenant	2,735	1,013	406
Interest on Investment			
Owner	$4,409	$2,073	$1,402
Part-owner	2,473	1,545	1,226
Tenant	1,521	733	514
Return to Operator & Family Labor			
Owner	$4,071	$1,389	$552
Part-owner	1,653	729	332
Tenant	1,214	290	-108
Percent Return on Investment			
Owner	6.2	2.3	-
Part-owner	3.5	-	-
Tenant	1.3	-	-
Land & Personal Property Taxes			
Owner	$940	$362	$217
Part-owner	342	199	163
Tenant	233	90	54

* Budget No.10 - 2,080-acre grain farm.
Budget No.11 - 800-acre grain farm.
Budget No.12 - 480-acre grain farm.

List of Agricultural Economics Reports

Number 1

1951 - Prospective Marketing Position of Farm Products Adaptable to Irrigation in North Dakota

-- J. C. Podany.

Number 2

1951 - The Research Program in Agricultural Economics and Rural Sociology

-- Dept. Staff.

Number 3

1951 - Present Farm Economy in Three Proposed Irrigation Areas of North Dakota

-- L. W. Schaffner

Number 4

1952 - Marketing Position of Proposed Irrigation Areas of North Dakota with Special Reference to the Minot Trade Area

-- J. C. Podany

Number 5

1952 - Farm and Ranch Budgets for Relocating Families in the Fort Berthold Indian Reservation

-- L. W. Schaffner