

Costs and Returns of North Dakota Agriculture

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How have the increases in income compared with the increases in expenditures of North Dakota farmers during the past 16 years?

What changes have occurred in the relative importance of the various sources of income and the various items of expenditures?

These questions can be answered by examining the data for the periods 1949-51 and 1965-67. The data presented in the tables are averages of the three years included in the two time periods.

Income received from marketing of crops increased from \$357,130,000 to \$445,884,000, or 25 per cent during the 16 years (Table 1). Receipts from all crops except corn and flaxseed increased. The largest increase was the sale of soybeans which jumped from \$714,000 to \$9,887,000, an increase of 1,284 per cent. However, receipts from the sale of this crop were only a small part of the total income in both periods.

Wheat, which was the major source of income, increased from \$228,112,000 to \$247,143,000, or 8 per cent, even though the acreage of wheat declined 29 per cent. Cash receipts from the sale of barley, the second most important cash crop, more than doubled between the two time periods. This was in part due to a 29 per cent increase in acreage planted to barley.

Sales of livestock products averaged \$174,229,000 in 1949-51, but climbed to \$267,026,000 in 1965-67, an increase of 53 per cent. The increase of 85 per cent in the sales of meat animals was primarily due to the marked increase of 111 per cent in sales of cattle and calves. Sales of hogs declined, but sales of sheep and lambs rose 46 per cent.

The most important change in the sales of dairy products was the large shift from the sale of butterfat to whole milk. While butterfat sales de-

Table 1. Realized gross income from farming, North Dakota averages, 1949-51 and 1965-67.

Item	1949-1951		1965-67		Per Cent Change 1949-51 To 1965-67
	\$1,000	Per Cent of Total	\$1,000	Per Cent of Total	
Cash Receipts From Marketings					
Crops:					
Wheat	228,112	40.0	247,143	28.3	8
Rye	3,096	.5	7,031	.8	27
Barley	35,890	6.3	74,037	8.5	106
Oats	8,956	1.6	19,448	2.2	117
Corn	3,455	.6	2,516	.3	-27
Hay	2,271	.4	5,628	.7	148
Flaxseed	49,987	8.8	40,152	4.6	-20
Soybeans	714	.1	9,887	1.1	1,284
Potatoes	18,237	3.2	22,794	2.6	25
Sugarbeets	2,769	.5	9,592	1.1	246
Other crops	3,643	.6	7,656	.9	110
All crops	357,130	62.6	445,884	51.1	25
Livestock products:					
Cattle and calves	88,366	15.5	186,010	21.3	111
Hogs	23,389	4.1	22,250	2.5	-5
Sheep and lambs	4,733	.8	6,924	.8	46
All meat animals	116,488	20.4	215,184	24.6	85
Milk, wholesale	3,466	.6	20,200	2.3	483
Butterfat	30,518	5.4	16,970	1.9	-44
Milk, retail	2,290	.4	847	.1	-63
All dairy products	36,274	6.4	38,017	4.3	5
Eggs	11,649	2.0	5,997	.7	-49
Turkeys	3,061	.5	4,222	.5	38
Chickens	3,789	.7	166	*	-96
All poultry products	18,499	3.2	10,385	1.2	-44
Wool	1,849	.3	1,720	.2	-7
Other products	1,119	.2	1,720	.2	54
All livestock products	174,229	30.5	267,026	30.5	53
Total crop and livestock products	531,359	93.1	712,910	81.5	34
Government payments	5,345	.9	128,200	14.7	2,299
Value of home consumption	22,600	4.0	11,300	1.3	-50
Gross rental value of farm dwelling	11,300	2.0	20,700	2.4	83
Total realized gross farm income	570,604	100.0	873,110	100.0	53

*Less than .05 of one per cent.

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clined 44 per cent, sales of milk to plants and dealers increased 483 per cent.

Receipts from chicken and egg sales declined but those from turkey sales increased 38 per cent, increasing from \$3,000,000 to more than \$4,000,000. Sales of poultry products contribute relatively little at present to the income of North Dakota farmers.

Sales of both crops and livestock products rose from \$531,359,000 in 1949-51 to an average of \$712,910,000 in 1965-67, an increase of 34 per cent. During the first period, income from sales of these items contributed 93 per cent to the total income of farmers, while in the latter period the proportion dropped to 82 per cent. This was due to rising income from other sources. For example, government payments amounted to \$5,345,000 in 1949-51, compared with \$128,200,000 in 1965-67, or an increase of 2,299 per cent.

The value of the gross rental from dwellings was up 83 per cent, but the value of home consumption of products produced on the farm declined 50 per cent. This decline was due in part to the decline in number of farms and change in patterns of consumption. Farm families today depend more on the purchase of food than formerly.

The total realized gross income rose from \$570,604,000 to \$873,110,000 during the 16-year period. This was a 53 per cent increase. It should be noted in Table 1 that wheat sales contributed 40 per cent to the total income from farmers in the first period compared with 28 per cent in the second period. This change was due to the large increase in government payments.

With the exception of hired labor, all items included in current operating expenditures increased between the two periods (Table 2). The largest increase was in the cost of fertilizers, which increased 1,742 per cent. It is estimated that 18,132 tons of fertilizer were purchased in 1949-51, compared with 247,925 tons in 1965-67, a 1,267 per cent increase.

Another item among the current operating expenditures in Table 2 that deserves special mention is the interest on nonreal estate debt. This item increased from \$6,411,000 to \$27,604,000, or 331 per cent. This increase was due mainly to the jump in nonreal estate debt from an average of \$102,256,000 in 1949-51 to \$394,343,000 in 1965-67. It is estimated that the interest rate advanced from 6.25 to 7.0 per cent.

Table 2. Farm production expenditures, North Dakota averages, 1949-51 and 1965-67.

Production Expenses	1949-1951		1965-67		Per Cent Change 1949-51
	\$1,000	Per Cent of Total	\$1,000	Per Cent of Total	To 1965-67
Current operating expenses:					
Feed	15,400	4.4	28,700	4.9	86
Livestock	5,600	1.6	13,900	2.4	148
Seed	11,700	3.4	14,300	2.4	2
Fertilizer	1,200	.3	22,100	3.8	1,742
Repairs and maintenance of buildings	7,291	2.1	10,745	1.8	47
Repairs and operation of motor vehicles	21,774	6.2	36,876	6.3	69
Repairs and operation of other machinery	15,506	4.4	24,861	4.3	60
Fuel and oil used in farm business	46,454	13.3	51,303	8.8	11
Interest on nonreal estate debt	6,411	1.8	27,604	4.7	331
Pesticides	1,489	.4	4,723	.8	217
Electricity (business use)	614	.2	1,041	.2	70
Telephone (business use)	593	.2	3,231	.5	445
Irrigation	99	*	232	*	134
Veterinary services and medicines	2,455	.7	3,260	.6	33
Crop insurance	3,079	.9	5,204	.9	69
Other expenses	16,627	4.8	22,608	3.9	36
Hired labor	37,623	10.8	23,800	4.1	-37
Total current operating expense	193,915	55.5	294,488	50.4	52
Fixed expenses:					
Depreciation and accidental damage to farm buildings	8,574	2.4	25,171	4.3	194
Depreciation of motor vehicles	24,537	7.0	43,853	7.5	79
Depreciation of other farm machinery and equipment	36,091	10.3	79,423	13.6	120
Taxes on farm property	21,700	6.2	42,000	7.2	94
Interest on farm mortgage debt	3,000	.9	20,500	3.5	583
Net rent to nonfarm landlords	61,700	17.7	78,300	13.5	27
Total fixed expenses	155,602	44.5	289,247	49.6	89
Total production expenses	349,517	100.0	583,735	100.0	67

*Less than .05 of one per cent.

Cost of hired labor dropped from \$37,623,000 to \$23,800,000, a decline of 37 per cent. The total current operating expenditure averaged \$193,915,000 in the first period, compared with \$294,488,000 in the latter period, an increase of 52 per cent from the 1949-51 to the 1965-67 period.

Depreciation of capital items, one of the fixed expenditures, changed from an average of \$69,202,000 to \$148,477,000, an increase of about 115 per

Table 3. Net income from farming, North Dakota, averages, 1949-51 and 1965-67.

	Total			Per Farm		
	1949-51 1,000	1965-67 1,000	Per Cent Change	1949-51 Dollars	1965-67 Dollars	Per Cent Change
Receipts from marketing:						
Crops	\$357,130	\$445,883	25	\$5,411	\$ 9,289	72
Livestock products	174,229	267,026	53	2,640	5,563	111
Total receipts from marketing	531,359	712,909	82	8,051	14,852	84
Government payments	5,345	128,200	2,298	81	2,671	3,198
Value of home consumption	22,600	11,300	-51	342	236	-31
Gross rental of farm dwelling	11,300	20,700	83	171	431	152
Total realized gross farm income	570,604	873,109	53	8,645	18,190	110
Production expenses:						
Current	193,915	284,448	52	2,938	6,135	109
Fixed	155,602	289,247	89	2,358	6,026	156
Total production expenses	349,517	583,735	67	5,296	12,161	130
Realized net farm income	221,087	289,374	31	3,349	6,029	80
Net change in farm inventories	21,000	-15,100	-42	318	-315	-48
Net farm income	\$242,087	\$274,274	13	\$3,667	\$ 5,714	56

cent. The marked increase in the depreciation of both motor vehicles and other farm machinery was due to the increase in number, size, and cost. For example, it is estimated that the total value of motor vehicles was \$163,580,000 in 1949-51, compared with \$292,353,000 in 1965-67. This increase in valuation was due to the 46 per cent advance in prices and 22 per cent increase in numbers. The corresponding values of other farm machinery were \$257,793,000 and \$517,307,000, respectively. Prices paid for other farm machinery advanced 57 per cent and numbers increased 28 per cent between the two time periods.

A very rapid rise occurred in farm mortgage debt. It increased from \$70,812,000 in 1949-51 to \$379,431,000 in 1965-67. During the same period, the interest rate rose from 4.25 per cent to 5.4 per cent, resulting in the interest payment advancing from \$3,000,000 to \$20,500,000, an increase of 583 per cent. The increase in total fixed expenditure amounted to 89 per cent and the total production expenditure, 67 per cent.

The realized net farm income is obtained by subtracting the total production expenditures from the realized gross income. The net farm income

is arrived at by adjusting the realized net farm income for changes in inventories. Net farm income amounted to \$242,087,000 in 1949-51 and \$274,274,000 in 1965-67, an increase of 13 per cent (Table 3).

The data in Table 3 are expressed in terms of both totals for North Dakota agriculture and per farm. The decline in the average number of farms from 66,000 in 1949-51 to 48,000 in 1965-67 results in marked changes in the per cent increases and declines when data are reduced to a per farm basis. For example, receipts from marketing of crops increased 25 per cent on a total basis and 72 per cent on a per farm basis. The net farm income on a per farm basis rose from \$3,667 to \$5,714, or a 56 per cent increase. The use of totals resulted in only a 13 per cent increase.

It is also important to analyze the financial operations of farming on a cash basis. Table 4 gives the cash income, expenditures, and net cash income. The net cash income in 1949-51 averaged \$3,888, compared with \$8,456 in 1965-67. This represents an increase of 117 per cent. The net cash income is what a farmer has available to spend

Table 4. Net cash income per farm, North Dakota, averages, 1949-51 and 1965-67.

	1949-51	1965-67
Cash income		
Receipts from marketing	\$8,055	\$14,852
Government payments	80	2,671
Total cash income	\$8,135	\$17,523
Cash expenses		
Current operating	\$2,938	\$ 6,134
Fixed	1,309	2,933
Total cash expenses	\$4,247	\$ 9,067
Net cash income	\$3,888	\$ 8,456

on family living and to reinvest in the farm business.

The net cash income is greater than the net farm income. This is true because the fixed non-cash items are excluded. It is essential that a certain amount of the cash income be set aside each year for the purchase of capital items needing replacement.

North Dakota agriculture has made economic growth during the 16-year period from 1949-51 to 1965-67 as indicated by the increase in net farm income. In this analysis, one must keep in mind that while the net farm income to North Dakota agriculture as a whole increased, the number of farms decreased 20 per cent which resulted in the total net farm income being distributed among fewer farmers in the 1965-67 period. Although the production expenditures consumed a higher proportion of the realized gross farm income in 1965-67 than formerly, the net farm income after allowing for the production expenditures and changes in inventory still showed a marked increase in 1965-67 over the 1949-51 period.

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(Continued from Page 1)

and in many different ways. But it also formally initiates a program of research which can be expected to add materially to both the theoretical and practical scientific knowledge which is of paramount importance to us in our present and future lives.

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