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Herbert R. Allen

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1979  
FINANCIAL ANALYSIS  
SOUTH DAKOTA FARM PANEL RECORDS PROGRAM

Economics Department  
Agricultural Experiment Station  
South Dakota State University  
Brookings, South Dakota 57006

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FINANCIAL ANALYSIS  
SOUTH DAKOTA FARM PANEL RECORDS PROGRAM - 1979

by Herbert R. Allen\*

Farm Business Summary

The data in this report have been obtained from a selected number of farms located in Central South Dakota. It is a summary of data gained in a limited participation program for the development of a computerized farm financial information system. For this reason, the data in this report cannot be interpreted as representative of all farms or areas in South Dakota. However, it can serve as a guide to those persons with farm operations similar to the ones included in this report.

Data is presented in this report on the average for all participating farms in one geographic location. Beef production is the predominant livestock operation. Farms with dairy, hogs and sheep are also included. The principle crops include wheat, corn, oats and alfalfa hay. Table 1 presents the acres per farm of various crops grown in 1979.

Table 1. Acres per Farm of Crops Produced in 1979

Crop	Acres
Alfalfa	219
Corn	194
Wheat	192
Oats	128
Sorghum	93
Barley	71
Sunflowers	64
Rye	54
Millet	17
Soybeans	6
Other**	167
Total Cropland	1,205

\*\*Other crops includes pasture, fallow, set aside acres, etc.

\*Professor of Economics

## Farm Earnings

Net farm income in 1979 averaged \$57,659.09 for the 12 farms included in the summary. After subtracting a charge for labor and capital \$2,380.36 was left as a return to management. In comparison, the average net farm income in 1978 was \$99,513. The net farm income in 1977 was \$-7,811 and in 1976, it was \$-43,920.68. The current year, 1979, is the first year since 1973 that participants in this program have realized a positive return to management. This means that in the years 1974 - 1978 they realized less than \$350 per month for their labor, less than 6 percent return on land investment and less than 7 percent return on working capital.

The year 1976 was the third and most severe year of a three year period of drought. In 1977, weather conditions improved and crop production was good. However, prices were down from the 1976 level and crop and livestock sales were down as farmers began to build up their inventories. In 1978, moisture conditions were favorable, crop prices strengthened and livestock prices were considerably above those of a year earlier. This made 1978 the best year for farmers since 1973. This recovery from a drought is consistent with research studies at South Dakota State University which indicate that recovery from a drought, of the severity of 1976, will take two to three years under favorable price conditions (1). Table 2 presents closing inventory prices used for major products in this farm record keeping program.

Table 2. Closing Inventory Prices for Farm Records, 1976 - 1979

Commodity	Prices			
	1976	1977	1978	1979
Corn per bu.	\$ 2.25	\$ 1.80	\$ 2.00	\$ 2.00
Spring Wheat per bu.	2.75	2.50	3.15	3.75
Soybeans per bu.	6.00	5.50	6.00	5.70
Barley per bu.	1.70	1.50	1.70	1.80
Oats per bu.	1.50	1.00	1.25	1.30
Alfalfa hay per ton	60.00	35.00	35.00	35.00
200 lb. butcher hogs/cwt.	38.00	45.00	50.00	42.00
Choice grade fat cattle/cwt.	40.00	42.00	54.00	68.00
500 lb. feeder steers/cwt.	38.00	40.00	70.00	70.00
100 lb. choice lambs/cwt.	45.00	60.00	68.00	68.00

Compared to 1978, hog prices in 1979 were a little lower but cattle prices were stronger. Crop prices remained steady to stronger and as a result farm record participants had the largest cash income of any year on record. In spite of a record cash income, net farm income was down in 1979 compared to 1978. Production costs began rising rather sharply in 1979. This is illustrated by the fact that it took \$1.96 of gross profit in 1978 to realize one dollar of net income while in 1979 it took \$2.97 of gross profit per dollar of net income. Gross profit is the figure obtained by adjusting the total cash income for inventory changes and all feed and livestock purchased.

### Operating Ratios

There are a number of operating ratios presented in this report. These ratios are meant to serve as a level of comparison with figures from your farm operation. You may be interested in comparing your 1979 figures with average figures in this report and also with those of previous years. Perhaps only a few of the ratios are of particular interest to you because they deviate significantly from the average. One or two ratios may be all that is needed to indicate where you are strong or weak.

In crop production, the gross value of crops per crop acre and expenses per crop acre are the basic ratios to examine. Average gross value of crops per crop acre continued to increase from \$71.62 in 1978 to \$74.73 in 1979. Crop expenses plus machine and power cost per acre on the average also rose from \$37.92 in 1978 to \$46.04 in 1979. Although average crop expenses continue to rise and may continue to do so in future years, they must be considered in relation to the effect they have on average gross value of crop production. You cannot afford to eliminate any expense item that will affect the gross crop returns more than it affects the crop expenses. In other words, high expenditures for fertilizers and other inputs will continue to be justified as long as the

increase in the value of production is greater than its cost.

In livestock production, the return per dollar of feed fed is the basic ratio to examine. The average ratio in 1979 was \$1.80 per dollar of feed fed in comparison to \$2.42 in 1978. This lower return reflects the rising production costs during 1979. If your return per dollar was low, you may want to check such factors as pigs saved per litter or calves weaned per cow to see if the problem lies in physical production efficiency or in the prices received for your livestock.

Machine investment per crop acre reached an all time high of \$63.33 per crop acre in 1979. During and immediately following the drought, farmers postponed necessary new investments in machinery. During 1976 and 1977, the investment per acre declined to \$37.50 and \$35.98 respectively. It rose to \$46.05 in 1978 and with added investment under inflationary prices rose to \$63.33 in 1979. If your machine investment per crop acre is significantly lower than the average of this report, greater machine investment may be necessary in the near future. A low investment per acre could also reflect capable management of used machinery. By whatever means we achieve the objective, a dependable set of equipment is important to getting the job done. If your machine investment per crop acre is significantly higher than the average in this report, careful consideration must be given to replacing only those items of equipment that is necessary.

Operating ratios are like thermometers. They measure the temperature of our business performance and only indicate areas that may deserve special attention and examination.

#### The Role of Farm Records

Good farm records do not guarantee success in either good times or bad. They document what is happening. This enables one to make decisions and adjustments

that one may not otherwise make. Over the years, numerous reports have come to me regarding the usefulness of these records. In individual instances, they have provided the difference between obtaining or not obtaining necessary credit. They have provided necessary data and information for obtaining government drought assistance. They have provided data for planning and preparation of requested cash flow reports. Farm records serve as an important tool in the planning and operation of our farm business.

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(1) David H. Jibben and Herbert R. Allen, Ranch Management: Handling Drought, Circular 225, Agricultural Experiment Station, South Dakota State University, Brookings, SD, April, 1979.

Farm Record Summary  
AVERAGE FOR ALL FARMS

INCOME STATEMENT

	1977 Average of 10 Farms	1978 Average of 11 Farms	1979 Average of 12 Farms
Livestock Sales	\$ 50,305	\$121,471	\$144,128
Crop Sales	10,021	22,385	40,498
Other Income	8,150	17,062	10,811
<b>TOTAL CASH INCOME</b>	<b>\$ 68,476</b>	<b>\$160,918</b>	<b>\$195,438</b>
Home Used Produce	496	1,087	977
Inventory Change	38,757	135,039	52,720
<b>GROSS INCOME</b>	<b>\$197,729</b>	<b>\$297,044</b>	<b>\$249,135</b>
Less Feed Bought	91,087	17,906	19,102
Less Livestock Purchased	19,457	84,040	59,058
<b>GROSS PROFIT</b>	<b>\$ 69,185</b>	<b>\$195,098</b>	<b>\$170,975</b>
Less Operating Expenses	34,863	53,951	60,838
Less Overhead Expenses	30,714	34,943	36,414
Less Depreciation	11,226	13,172	16,952
Capital Gains or Losses	-193	6,483	889
<b>NET FARM INCOME</b>	<b>\$ -7,811</b>	<b>\$ 99,513</b>	<b>\$ 57,660</b>
Plus Interest Paid	17,213	15,344	13,516
Less Family Labor - \$250/mo.	750	886	4,950*
Less Operator Labor - \$350/mo.	3,780	4,200	1,138*
<b>RETURN TO CAPITAL &amp; MGT.</b>	<b>\$ 4,872</b>	<b>\$109,771</b>	<b>\$ 65,088</b>
Less Interest on Land Owned @ 6%	12,841	15,091	26,031(7.5%)
Less Interest on Inventory @ 7%	11,760	21,142	36,676(9%)
<b>RETURN TO MANAGEMENT</b>	<b>\$-19,729</b>	<b>\$ 75,538</b>	<b>\$ 2,381</b>

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\*In 1979 family labor was charged at \$350 per month and operator labor at \$450 per month.



Farm Record Summary - 1979

INCOME STATEMENT

	<u>High 1/3</u>	<u>Low 1/3</u>	<u>Your Farm</u>
Livestock Sales	\$ 89,856.40	\$ 91,308.74	_____
Crop Sales	135,957.61	4,374.04	_____
Other Income	<u>15,208.68</u>	<u>4,122.81</u>	_____
TOTAL CASH INCOME	\$241,022.69	\$ 99,805.59	_____
Home Used Produce	866.67	530.40	_____
Inventory Change	<u>107,071.67</u>	<u>-15,088.17</u>	_____
GROSS INCOME	\$348,961.03	\$ 85,247.82	_____
Less Feed Bought	9,178.90	15,668.77	_____
Less Livestock Purchased	<u>27,306.08</u>	<u>6,875.15</u>	_____
GROSS PROFIT	\$312,476.05	\$ 62,703.90	_____
Less Operating Expenses	101,979.88	21,874.80	_____
Less Overhead Expenses	61,499.72	19,457.80	_____
Less Depreciation	27,182.62	11,993.73	_____
Capital Gains or Losses	<u>2,738.13</u>	<u>-837.24</u>	_____
NET FARM INCOME	\$124,551.96	\$ 8,540.33	_____
Plus Interest Paid	12,443.64	11,799.05	_____
Less Family Labor - @\$350/mo.	5,400.00	3,600.00	_____
Less Operator Labor - @ \$450/mo.	<u>2,100.00</u>	<u>466.67</u>	_____
RETURN TO CAPITAL & MGT.	\$129,495.60	\$ 16,272.71	_____
Less Interest on Land Owned @ 7.5%	44,379.00	16,581.25	_____
Less Interest on Inventory @ 9.0%	<u>58,949.53</u>	<u>27,508.82</u>	_____
RETURN TO MANAGEMENT	\$ 26,167.07	\$-27,817.36	_____

Farm Record Summary  
AVERAGE FOR ALL FARMS

BUSINESS ANALYSIS FACTORS

	1977 Average of <u>10 Farms</u>	1978 Average of <u>11 Farms</u>	1979 Average of <u>12 Farms</u>
<u>RESOURCES USED</u>			
Value of Land & Improvements	\$234,685.78	\$277,228	\$366,650.59
Machinery & Equipment	39,822.73	47,772	68,209.05
Livestock & Feed	<u>97,432.35</u>	<u>215,588</u>	<u>267,323.54</u>
Total Capital Owned	\$371,940.87	\$540,588	\$702,183.18
Total Capital Rented	---	---	275,849.58
Total Capital Managed	---	---	978,032.75
Total Acres Operated	2,336.1	2,729	2,640.92
Acres Rented	895.3	1,259	1,119.09
Acres of Cropland	1,135.9	1,232	1,205.80
Months of Labor Used	24.40	24.82	27.29
<u>OPERATING RATIOS</u>			
Net Worth Change	\$ 15,136.98	\$137,159	\$ 89,199.17
Gross Value of Crops/Crop Acre	50.52	71.62	74.73
Crop Expenses/Crop Acre	4.82	7.02	8.42
Machine Investment/Crop Acre	35.98	46.05	63.33
Returns/Dollar Fed Fed	1.49	2.42	1.80
Remaining Machinery Cost (%)	41.15	52.83	52.44
Machine & Power Cost/Crop Acre	23.94	30.90	37.62
Gross Profit/Man	37,147.30	91,170.12	74,412.49
Gross Profit/Dollar Net Income	-8.86	1.96	2.97
Current Ratio	1.83	12.47	11.19
Net Capital Ratio (End of Year)	2.25	2.19	2.38
Operating Capital	137,255	263,360	335,532.37
Percent Return on Capital Owned	1.31	20.31	9.27
Percent Return on Operating Capital	-5.81	35.95	11.64
<u>CROP AND LIVESTOCK PRODUCTION</u>			
Pigs Weaned/Litter	7.8	7.0	8.50
Calves Weaned/Cow	.91	.92	.91
Lambs Weaned/Ewe	1.16	1.14	1.06
Corn Yield/Acre	24.13	47.63	65.82
Winter Wheat Yield/Acre	23.8	0.0	36.60
Spring Wheat Yield/Acre	23.57	18.72	17.65
Corn Silage Tons/Acre	5.98	6.95	7.38
Oat Yield/Acre	42.4	44.22	33.56
Soybean Yield/Acre	---	---	40.00
Grain Sorghum Yield/Acre	---	---	33.88
Flax Yield/Acre	---	---	0.0
Barley Yield/Acre	---	---	21.00
Sunflower yield/Acre	---	---	1,301.00
Alfalfa Hay Tons/Acre	1.55	2.47	1.88

Farm Record Summary - 1979

BUSINESS ANALYSIS FACTOR

	<u>High 1/3</u>	<u>Low 1/3</u>	<u>Your Farm</u>
<u>RESOURCES USED</u>			
Value of Land and Improvements	\$ 617,450.75	\$ 222,041.29	_____
Machinery & Equipment	136,089.16	41,246.56	_____
Livestock & Feed	466,042.67	102,531.81	_____
Total Capital Owned	1,219,582.58	365,819.66	_____
Total Capital Rented	548,981.67	152,333.33	_____
Total Capital Managed	1,768,564.25	518,152.99	_____
Total Acres Operated	3,862.33	1,610.00	_____
Acres Rented	2,033.03	606.67	_____
Acres of Cropland	2,049.87	520.33	_____
Months of Labor Used	38.33	21.67	_____
<u>OPERATING RATIOS</u>			
Net Worth Change	120,850.56	54,809.21	_____
Gross Value of Crops/crop Acre	110.53	75.46	_____
Crop Expenses/crop Acre	13.35	2.37	_____
Machine Investment/crop Acre	70.10	79.75	_____
Returns/Dollar Feed Fed	1.49	1.23	_____
Machine and Power Cost/crop Acre	39.02	40.57	_____
Percent Machinery Cost Remaining	60.28	54.58	_____
Gross Profit/Man	96,732.71	37,394.97	_____
Gross Profit/Dollar Net Income	2.51	7.34	_____
Current Ratio	1.74	1.21	_____
Net Capital Ratio (End of Year)	2.83	1.36	_____
Operating Capital	602,131.42	143,778.23	_____
Percent Return on Capital Owned	10.62	4.45	_____
Percent Return on Operating Capital	14.14	-0.21	_____
<u>CROP AND LIVESTOCK PRODUCTION</u>			
Pigs Weaned/Litter	0.0	0.0	_____
Calves Weaned/Cow	0.88	0.85	_____
Lambs Weaned/Ewe	0.0	0.75	_____
Corn Yield/Acre	72.94	42.10	_____
Winter Wheat Yield/Acre	36.60	0.0	_____
Spring Wheat Yield/Acre	22.74	14.85	_____
Corn Silage Tons/Acre	8.60	0.0	_____
Oat Yield/Acre	0.0	30.00	_____
Soybean Yield/Acre	40.00	0.0	_____
Grain Sorghum Yield/Acre	48.75	0.0	_____
Flax Yield/Acre	0.0	0.0	_____
Barley Yield/Acre	0.0	0.0	_____
Sunflower Yield/Acre	1,602.00	0.0	_____
Alfalfa Hay Tons/Acre	2.31	2.67	_____

Business Analysis Computations Employed  
in the Farm Panel Records Program

TOTAL CASH INCOME: Livestock sales + crop sales + other income.

GROSS INCOME: Total cash income + home used produce +/- or - inventory change.  
Inventory is composed of feed, grain and livestock listed under current assets.

GROSS PROFIT: Gross income less feed and livestock purchased.

NET FARM INCOME: Gross profit less operating expense less overhead expense less depreciation +/- or - capital gains or losses.

OPERATING EXPENSE: All expense items with expense code number 1-119. In the cash flow report it is labor and management hired down through other farm expense.

OVERHEAD EXPENSE: Improvement repairs + insurance + taxes + interest + rent.

DEPRECIATION: As computed in the depreciation schedule.

CAPITAL GAINS OR LOSSES: Capital items sold (code numbers 150-159) less remaining value of items sold (from depreciation schedule).

RETURN TO CAPITAL AND MANAGEMENT: Net farm income + interest paid less value of family labor less value of operator labor.

INTEREST ON LAND: Value of land owned x interest rate.

INTEREST ON INVENTORY: Average inventory multiplied by the interest rate is used in arriving at an interest charge on all capital in the business. Average inventory equals total value at the beginning of the year plus total value at the end of the year divided by 2.

Inventory components = Feed grain and seeds + all livestock on hand + machinery and equipment + auto + breeding stock on depreciation + value of farm improvements.

RETURN TO MANAGEMENT: Return to capital and management less interest on land less interest on inventory.

NET WORTH CHANGE: Net worth at the end of the year less net worth at the beginning of the year.

ESTIMATED FAMILY LIVING EXPENSE: Net farm income + non-farm income less net worth change.

**GROSS VALUE OF CROPS PER CROP ACRE:** From the crop production record (Form 4);  
Value of rotated crops in column 5 divided by total tillable acres.

**CROP EXPENSES PER CROP ACRE:** Total of crop costs, fertilizer, chemicals, home grown grain for seed and landlord's crop expenses divided by total tillable acres.

**MACHINE INVESTMENT PER CROP ACRE:** Value of machinery and equipment plus farm share of the auto at the beginning of the year plus value of these same items at the end of the year divided by 2. This average investment for the year is divided by total tillable acres.

**LIVESTOCK RETURNS PER DOLLAR FEED FED:** Livestock increase divided by feed fed.

I. Add the following items:

- (a) Ending inventory of livestock listed under current assets and working assets
- (b) Eggs sold
- (c) Dairy products sold
- (d) Livestock sold
- (e) Value of home used produce
- (f) Sale of livestock from the depreciation schedule (Income code 154)

Subtract the following items:

- (a) Beginning inventory of livestock listed under current assets and working assets
- (b) Livestock purchased (Expense codes 180-189)
- (c) Purchase of livestock to be depreciated (Expense code 194)

Balance equals livestock increase

II. Add the following items:

- (a) Beginning inventory of feed grain and seeds
- (b) Feed purchased
- (c) Value of feed raised (col. 5, line 28 of crop production record)

Subtract the following items:

- (a) Crops sold
- (b) Landlord's share of feed raised (col. 6, line 28 of crop production record)
- (c) Value of own grain used for seed
- (d) Government crop payments (col. 5, line 10 of crop production record)
- (e) Value of feed destroyed or lost (include crop insurance received)
- (f) Ending inventory of feed grain and seeds

Balance equals feed fed

**MACHINE AND POWER COST PER CROP ACRE:** Gas, fuel, oil, + machine hire + machine repairs + freight and trucking + auto expense + telephone and electricity + depreciation on machinery and equipment + depreciation on auto. Total expense is divided by total tillable acres.

**GROSS PROFIT PER MAN:** Gross profit divided by years of total labor used.  
(hired labor + family labor + operator labor)

**GROSS PROFIT PER DOLLAR NET FARM INCOME:** Gross profit divided by net farm income.

**CURRENT RATIO (END OF YEAR):** Total current assets divided by total current liabilities.

**NET CAPITAL RATIO (END OF YEAR):** Total assets divided by total liabilities.

**CAPITAL OWNED:** (Total assets at beginning of the year plus total assets at end of year) divided by 2. However, only farm investment assets are included. In the net worth statement the total assets are reduced by cash on hand, accounts receivable, bonds, value of life insurance and other assets.

**RETURN ON CAPITAL OWNED:** Return to capital and management divided by capital owned.

**OPERATING CAPITAL:** Capital owned less value of fixed assets.

**RETURN ON OPERATING CAPITAL:**

- a. (capital owned less operating capital) x interest rate equals return on fixed assets.
- b. (return to capital and management less return on fixed assets) divided by operating capital equals return on operating capital.