

SUMMARY REPORT ON FINANCIAL, SIZE AND PERFORMANCE  
DATA FOR 167 CASH GRAIN FARMS,  
OHIO, 1984

by

Richard D. Duvick and James Hoorman

Department of Agricultural Economics and Rural Sociology  
Ohio Cooperative Extension Service  
The Ohio State University  
in cooperation with Economic Research Service, USDA

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	Page #
Introduction	1
Highlights	1
Overview of Farms Summarized	1
Table 1: Number of Farms, Crop Yields, & Measures of Size For 167 Cash Grain Farms by Acres of Cropland, OH, 1984	2
Measures of Earnings	3
Table 2: Income, Expense & Measures of Earnings For 167 Cash Grain Farms By Acres of Cropland, OH, 1984	3
Table 3: Income Statement for 167 Cash Grain Farms By Acres of Cropland, Ohio, 1984	4
Balance Sheet Data	5
Table 4: Balance Sheet Data On Cash Grain Farms by Acres of Cropland, OH, 1984	6
Measures of Financial Efficiency	7
Table 5: Measures of Financial Efficiency On 167 Cash Grain Farms By Acres of Cropland, Ohio, 1984	7
Efficiency and Cost Measures	8
Table 6: Efficiency Measures And Cost Per Tilleable Acre On 167 Cash Grain FARMS By Acres of Cropland, OH, 1984.	8
Highlights - Cash Grain Farms By Debt To Asset Ratio Classes	10
Table 7: Number of Farms, Crop Yields, and Measures of Size for 167 Grain Farms By Debt to Asset Ratios, OH, 1984.	10
Table 8: Income, Expense and Measures of Earnings for 167 Cash Grain Farms By Debt to Asset Ratios, OH, 1984	11
Table 9: Income Statement for 167 Cash Grain Farms By Debt to Asset Ratio, OH, 1984	12
Table 10: Balance Sheet Data On 167 Cash Grain Farm By Debt to Asset Ratios, OH, 1984	13
Table 11: Measures of Financial Efficiency On 167 Cash Grain Farms By Debt to Asset Ratio, OH, 1984	14
Table 12: Efficiency Measures and Cost per Tilleable Acre On 167 Cash Grain Farms By Debt to Asset Ratios, OH, 1984	15
Distribution of Farms By Size and Debt to Asset Class	16
Table 13: Distribution of 167 Cash Grain Farms By Tillable Acres and Debt to Asset Ratio, OH, 1984	16
Glossary	17

Summary Report On Financial, Size and Performance Data  
For 167 Cash Grain Farms, Ohio, 1984

INTRODUCTION

This summary is compiled from 1984 records of a sample of 167 Ohio cash grain farms participating in the Agrifax farm records program. Agrifax is operated through the Federal Land Bank and Federal Intermediate Credit Bank of Louisville, District IV, which include the states of Indiana, Kentucky, Tennessee and Ohio. Data on Ohio farms were made available to The Ohio State University for research purposes, with the understanding that no individual farm data would be identified by name or location.

Farms in the sample were defined as cash grain farms if at least 50% of the Value of Farm Production was from the sale of crops. These farms are not necessarily representative of all Ohio cash grain farms, but they do provide an indication of results for Ohio's cash grain producers. Similar data is also available on a sample of 128 Ohio dairy farms for 1984, and is reported in a separate publication. In addition, a third publication summarizes farms for each type by net farm earnings.

These farms were summarized for various characteristics including financial performance, debt, farm size, and economic efficiency. In addition, the farms were sorted into subgroups by farm size and by debt to asset ratio: The 5 farm size groups, measured by tillable acres, were: Up to 250, 251-500, 501-750, 751-1000, and Over 1000 acres. There were 4 categories measured by debt to asset (D/A) ratio: Up to .30, .31-.50, .51-.70, and Over .70. Various tables show the results of summarizing the data by these categories. The results by size of farm are presented first, followed by results when classified by the D/A Ratio.

HIGHLIGHTS -- CASH GRAIN FARMS BY SIZE OF FARM CLASSES

Overview of Farms Summarized

The 167 cash grain farms averaged 662 tillable acres, utilized an average of 1.6 Man Year Equivalents (1 MYE equals 3,000 hours), and had annual sales as measured by Value of Farm Production of \$182,230 (Table 1). On average, the Balance Sheet showed \$749,200 in assets, \$371,100 in liabilities, and \$378,100 of equity. Thus their average debt to asset ratio (D/A) was just under 50%. Crop yields received were slightly above state averages for 1984 at 123 bushels per acre for corn, 38 for soybeans, and 48 for wheat. Of the total 662 acres of tillable land operated, 205 acres was owned, 304 acres cash rented and 153 acres was share rented. This works out to be 31% owned, 46% cash rented and 23 % share rented.

When the farms are sorted by the 5 tillable acres classes, they are fairly well distributed. The classes with the greatest number of farms are the 251-500 and 501-750 acre categories, with 43 and 52 of the total of 167 farms, respectively. The smallest

Table 1: Number of Farms, Crop Yields, and Measures of Size For 167 Cash Grain Farms  
By Acres of Cropland, Ohio, 1984.

Size Characteristics	Unit	FARM SIZE IN ACRES OF CROPLAND					All Farms
		Up To 250	251-500	501-750	751-1,000	Over 1000	
NUMBER OF FARMS	Number	23	43	52	18	31	167
TILLABLE ACRES FARMED	Acres	162	391	610	863	1384	662
TOTAL LABOR USED	MYE	0.8	1.1	1.2	2.2	2.8	1.6
VALUE OF FARM PRODUCTION	\$	\$50,463	\$98,484	\$164,101	\$240,769	\$392,563	\$182,230
BALANCE SHEET DATA							
Total Assets	\$1,000	\$347.5	\$437.5	\$718.7	\$1118.7	\$1315.8	\$749.2
Total Liabilities	\$1,000	171.8	206.9	357.8	531.5	675.4	371.1
Total Equity	\$1,000	175.7	230.6	360.9	587.2	640.4	378.1
CROP YIELDS							
Corn	Bu./A.	114	122	125	121	127	123
Soybeans	Bu./A.	35	37	40	37	38	38
Wheat	Bu./A.	42	45	50	51	49	48
TILLABLE ACRES BY TENURE							
Total Owned	Acres	108	120	230	372	420	236
Tillable Owned	Acres	82	108	196	330	375	205
Tillable Cash Rented	Acres	47	167	263	333	740	304
Tillable Share Rent	Acres	33	116	151	200	269	153
TOTAL TILLABLE	Acres	162	391	610	863	1384	662
PERCENT OF TILLABLE ACRES							
Owned	Percent	51	28	32	38	27	31
Cash Rented	Percent	29	43	43	39	53	46
Share Rented	Percent	20	30	25	23	19	23

categories are the 751-1000 acre class with 18 farms, and the Under 250 acre class with only 23 farms. No doubt, the larger farms are overrepresented, in terms of relative numbers. But in terms of a useful sample to depict income and performance measures for various size farms, this is an extremely good set of data.

Crop yields are nearly identical for the 4 larger size classes. However, the smallest farm size group has lower yields for all 3 crops. Lower yields on the smallest farms is not a new observation.

When comparisons are made of farm size measures between the 5 size groups, there is a normal increase in size of tillable

acres, MYE of labor, value of farm production, and balance sheet values. However, the Over 1000 acres category is the only group with less than 50% equity.

There are also differences in how they acquired the land farmed. The smallest size group owns 51% of the land, while the others own only 27 to 38%. The 4 larger size groups primarily substituted cash rented land for owned land, with 39 to 53 percent acquired via cash rent. The amount of land share rented was fairly similar between the 5 groups, ranging from 19% for the largest size group to 30% for the 251-500 acre class.

### Measures of Earnings

In 1984 these 167 Ohio cash grain farms had an average Value of Farm Production of \$182,230 (Table 2). Cash receipts were \$203,295, but inventory changes and other adjustments to income of (\$21,065) resulted in the final \$182,230 figure. Total farm expense, including both variable and fixed expenses, totaled \$187,828. See Table 3 for a detailed income statement.

Table 2: Income, Expense and Measures of Earnings For 167 Cash Grain Farms  
By Acres of Cropland, Ohio, 1984.

Financial Characteristics	FARM SIZE IN ACRES OF CROPLAND						
	Unit	Up To 250	251-500	501-750	751-1,000	Over 1000	All Farms
<b>INCOME</b>							
Total Cash Income	\$	\$59,074	\$110,242	\$182,209	\$274,686	\$433,282	\$203,295
Other Income & Inv. Changes	\$	(8,611)	(11,758)	(18,108)	(33,917)	(40,719)	(21,065)
VALUE OF FARM PRODUCTION	\$	\$50,463	\$98,484	\$164,101	\$240,769	\$392,563	\$182,230
<b>EXPENSE</b>							
Total Variable Expense	\$	\$30,844	\$54,342	\$81,631	\$126,825	\$204,316	\$95,259
Total Fixed Expense	\$	\$28,547	\$50,243	\$83,262	\$138,277	\$187,849	\$92,569
TOTAL FARM EXPENSE	\$	\$59,391	\$104,585	\$164,893	\$265,102	\$392,165	\$187,828
<b>EARNINGS</b>							
Net Farm Earnings	\$	(\$8,928)	(\$6,101)	(\$792)	(\$24,333)	\$398	(\$5,598)
Net Non-Farm Income	\$	\$16,896	\$14,783	\$7,356	\$8,274	\$8,357	\$10,867
NET EARNINGS	\$	\$7,968	\$8,682	\$6,564	(\$16,059)	\$8,755	\$5,269
Operator Labor Draw	\$	\$12,552	\$17,982	\$20,999	\$22,021	\$22,485	\$19,445
Income Tax	\$	\$1,236	\$1,566	\$1,128	\$1,213	\$1,821	\$1,393
TOTAL NET EARNINGS	\$	(\$5,820)	(\$10,866)	(\$15,563)	(\$39,293)	(\$15,551)	(\$15,569)
NET FARM EARNINGS	\$	(\$8,928)	(\$6,101)	(\$792)	(\$24,333)	\$398	(\$5,598)
RETURN TO UNPAID LABOR & MGT	\$	(\$19,470)	(\$19,937)	(\$22,446)	(\$59,565)	(\$38,026)	(\$28,284)
RETURN TO INVESTMENT	\$	(\$14,071)	(\$5,067)	\$13,075	(\$26,741)	\$28,766	\$3,283
RETURN TO EQUITY	\$	(\$28,398)	(\$26,038)	(\$23,238)	(\$83,898)	(\$37,628)	(\$33,882)

Table 3: Income Statement For 167 Cash Grain Farms By Acres of Cropland, Ohio, 1984.

INCOME STATEMENT	FARM SIZE IN ACRES OF CROPLAND					
	Unit Up To 250	251-500	501-750	751-1,000	Over 1000	All Farms
<b>CASH INCOME</b>						
Crops	\$ 45,765	\$84,038	\$134,992	\$187,243	\$316,356	\$148,882
Hogs	\$ 2,828	\$6,760	\$11,549	\$29,763	\$16,546	\$12,006
Dairy Products	\$ 0	\$4,098	\$841	\$5,448	\$0	\$1,904
Dairy	\$ 14	\$987	\$129	\$229	\$67	\$333
Beef	\$ 5,252	\$6,000	\$11,742	\$7,807	\$11,086	\$8,824
Other Farm Income	\$ 5,215	\$8,359	\$22,956	\$44,196	\$89,227	\$31,346
<b>TOTAL CASH INCOME</b>	<b>\$ 59,074</b>	<b>\$110,242</b>	<b>\$182,209</b>	<b>\$274,686</b>	<b>\$433,282</b>	<b>\$203,295</b>
Resale Purchases	\$ (\$3,001)	(\$3,302)	(\$16,168)	(\$16,948)	(\$31,047)	(\$13,888)
Breeder Livestock Pur.	\$ (\$193)	(\$445)	(\$273)	(\$397)	(\$336)	(\$331)
Livestock Inv. Change	\$ (\$198)	(\$431)	\$43	(\$4,815)	\$396	(\$570)
Crop & Feed Inv. Change	\$ (\$5,061)	(\$7,395)	(\$1,963)	(\$11,027)	(\$11,634)	(\$6,560)
Accts Receivable Change	\$ (\$325)	(\$281)	\$341	(\$1,126)	\$2,720	\$373
Net Non-Cash Farm Inc.	\$ 2	\$33	\$28	\$338	\$143	\$80
Livestock Payable	\$ 165	\$63	(\$116)	\$58	(\$961)	(\$169)
<b>VALUE OF FARM PRODUCTION</b>	<b>\$ 50,463</b>	<b>\$98,484</b>	<b>\$164,101</b>	<b>\$240,769</b>	<b>\$392,563</b>	<b>\$182,230</b>
<b>EXPENSES</b>						
<b>Variable Expense</b>						
Wages	\$ 868	\$2,574	\$3,662	\$11,162	\$21,484	\$7,114
Repair Machinery	\$ 2,511	\$5,049	\$8,548	\$10,787	\$17,578	\$8,733
Feed	\$ 2,723	\$4,188	\$5,485	\$13,190	\$6,535	\$5,796
Seed & Plants	\$ 3,242	\$5,994	\$8,123	\$13,270	\$22,287	\$10,087
Fertilizer & Lime	\$ 8,703	\$13,150	\$21,454	\$32,531	\$53,144	\$24,637
Spray & Chemicals	\$ 4,379	\$8,040	\$10,562	\$14,674	\$27,293	\$12,610
Custom Hire	\$ 1,564	\$1,315	\$2,015	\$2,313	\$3,723	\$2,122
Supplies	\$ 216	\$1,278	\$1,769	\$5,037	\$5,289	\$2,435
Breeding	\$ 10	\$38	\$2	\$44	\$0	\$17
Vet & Medicine	\$ 182	\$252	\$250	\$457	\$316	\$276
Fuel & Lube	\$ 3,415	\$6,374	\$10,767	\$13,503	\$23,106	\$11,209
Utilities	\$ 633	\$1,148	\$1,795	\$2,765	\$3,754	\$1,937
Marketing	\$ 677	\$355	\$223	\$801	\$326	\$401
Storage	\$ 240	\$757	\$1,206	\$1,076	\$2,883	\$1,255
Other Than Above	\$ 1,481	\$3,830	\$5,770	\$5,215	\$16,598	\$6,630
<b>TOTAL VARIABLE EXPENSE</b>	<b>\$ 30,844</b>	<b>\$54,342</b>	<b>\$81,631</b>	<b>\$126,825</b>	<b>\$204,316</b>	<b>\$95,259</b>
<b>Fixed Expenses</b>						
Interest	\$ 14,327	\$20,971	\$36,313	\$57,157	\$66,394	\$37,165
Taxes	\$ 1,037	\$1,768	\$2,263	\$4,891	\$5,412	\$2,835
Lease Payments	\$ 2,277	\$11,090	\$20,046	\$29,282	\$60,039	\$23,712
Insurance	\$ 1,178	\$1,641	\$2,822	\$4,276	\$5,516	\$2,948
Building Repairs	\$ 347	\$465	\$842	\$1,584	\$2,508	\$1,066
Building Depreciation	\$ 2,511	\$2,999	\$4,561	\$11,361	\$11,578	\$5,912
Equipment Depreciation	\$ 6,870	\$11,309	\$16,415	\$29,726	\$36,402	\$18,931
<b>TOTAL FIXED EXPENSE</b>	<b>\$ 28,547</b>	<b>\$50,243</b>	<b>\$83,262</b>	<b>\$138,277</b>	<b>\$187,849</b>	<b>\$92,569</b>
<b>TOTAL FARM EXPENSE</b>	<b>\$ 59,391</b>	<b>\$104,585</b>	<b>\$164,893</b>	<b>\$265,102</b>	<b>\$392,165</b>	<b>\$187,828</b>
<b>NET FARM EARNINGS</b>	<b>\$ (\$8,928)</b>	<b>(\$6,101)</b>	<b>(\$792)</b>	<b>(\$24,333)</b>	<b>\$398</b>	<b>(\$5,598)</b>

Net Farm Earnings were (\$5,598) for these farms in 1984. This means that gross receipts were not sufficient to cover cash expense and depreciation, so the return to the operator for his capital, labor and management shows a loss of \$5,598 for 1984. However, the average non-farm income of \$10,867 allowed positive Net Earnings of \$5,269. But when deductions are made for family living (Operator Labor Draw) and income tax, Total Net Earnings are again negative at (\$15,569).

When these figures are examined by size group, all categories end up with negative Total Net Earnings. However, the smaller farms have higher off-farm income and the smallest Total Net Earnings loss. The largest loss, both in Net Farm and Total Net Earnings occurred in the 751-1,000 acre size class. Farms in the largest size class, Over 1,000 acres, were the only class to have positive Net Farm Earnings, although it was only \$398.

Returns To Unpaid Labor & Management averaged (\$28,284) for these 167 farms in 1984. This measure is calculated by deducting a charge for equity capital, using a 6 percent rate, from Net Farm Earnings. A mixed picture emerges when returns to capital are calculated. Return to Investment is positive at \$3,283, but the Return To Equity is negative at (\$33,882). By size groups, all have losses for Return To Unpaid Labor & Management and Return to Equity. However, the 501-750 acre and Over 1000 acres size classes have positive Return To Investment, while the two smaller size groups and the 751-1000 size group have a negative Return To Investment.

### Balance Sheet Data

Balance sheet data for 1984 shows \$749,200 in Total Assets, \$371,100 in Total Liabilities, and \$378,100 in Total Equity per farm (Table 4). The majority of the assets, liabilities, and equity are in the fixed category, although over 1/4 of the debt is held as current liabilities. During 1984, the change in owners equity was a loss of \$13,000. Thus, while these farms incurred losses in 1984, neither the average farm nor any of the size classes exhibit severe losses in equity in 1984.

Other balance sheet ratios help to portray the financial situation of these cash grain farmers. Measures of liquidity give an indication of how well they may be able to make annual payments. Lenders like the Current Ratio, comparing current assets to current liabilities, to be 2.0 or better. The average for all farms in 1984 was only 1.24, much below the desired level. The ratio of current to total liabilities of .28 shows that just over one-fourth of their liabilities is due annually. This is higher than desirable. The Intermediate Ratio, comparing current & intermediate assets to current & intermediate liabilities, of 1.76 is also below the desired ratio of at least 2.0.

Table 4: Balance Sheet Data On 167 Cash Grain Farms By Acres of Cropland, Ohio, 1984.

BALANCE SHEET INFORMATION	FARM SIZE IN ACRES OF CROPLAND						All Farms
	Unit Up To 250	251-500	501-750	751-1,000	Over 1000		
<b>BALANCE SHEET DATA</b>							
Current Assets	\$1,000	49.4	73.2	122.4	149.1	265.3	129.1
Current Liabilities	\$1,000	48.0	57.7	104.3	140.3	187.5	103.9
Current Equity	\$1,000	1.4	15.5	18.1	8.8	77.8	25.2
Intermediate Assets	\$1,000	78.4	97.0	144.5	211.5	261.3	152.1
Inter. Liabilities	\$1,000	17.7	34.6	44.1	81.4	120.9	56.3
Intermediate Equity	\$1,000	60.7	62.4	100.4	130.1	140.4	95.8
Fixed Assets	\$1,000	219.7	267.3	451.8	758.1	789.2	468.0
Fixed Liabilities	\$1,000	106.1	114.6	209.4	309.8	367.0	210.9
Fixed Equity	\$1,000	113.6	152.7	242.4	448.3	422.2	257.1
Total Assets	\$1,000	347.5	437.5	718.7	1118.7	1315.8	749.2
Total Liabilities	\$1,000	171.8	206.9	357.8	531.5	675.4	371.1
Total Equity	\$1,000	175.7	230.6	360.9	587.2	640.4	378.1
Change in Equity, 1983-4	\$1,000	-0.3	-10.2	-12.3	-24.8	-20.4	-13.0
<b>FINANCIAL PERFORMANCE MEASURES</b>							
<b>Liquidity Ratios</b>							
Current Ratio (CA/CL)	Ratio	1.03	1.27	1.17	1.06	1.41	1.24
CurrLiab/TotLiab (CL/TL)	Ratio	.28	.28	.29	.26	.28	.28
Inter. (CA+IA)/(CL+IL)	Ratio	1.95	1.84	1.80	1.62	1.71	1.76
<b>Solvency Ratios</b>							
Debt/Asset(D/A)or(TL/TA)	Ratio	0.49	0.47	0.50	0.48	0.51	0.50
Equity Ratio (TE/TL)	Ratio	0.51	0.53	0.50	0.52	0.49	0.50
Leverage (TL/TE)	Ratio	0.98	0.90	0.99	0.91	1.05	0.98
<b>Profitability</b>							
Net Farm Earnings as % of Average Farm Assets	%	-3.21	-1.55	-1.12	-2.33	.03	-.81

Turning to solvency ratios, the average Debt to Asset Ratio (and its mirror image, the Equity Ratio) for all farms was 50%, indicating they have about equal amounts of equity and debt. Net Farm Earnings as a Percent of Average Farm Assets was a negative, at (.81)%.

These ratios indicate that many of the individual farms that make up these group averages are experiencing financial distress. The situation appears to be similar regardless of the size class of farms.



## Measures of Financial Efficiency

Cash grain farms require large amounts of capital relative to sales. In 1984, these farms had a Turnover Ratio of .26, which means they averaged 26 cents in sales for each dollar of investment (Table 5). The Turnover Ratio was only .18 for the

Table 5: Measures of Financial Efficiency On 167 Cash Grain Farms By Acres of Cropland, Ohio, 1984.

Efficiency Measures	FARM SIZE IN ACRES OF CROPLAND						All Farms
	Unit	Up To 250	251-500	501-750	751-1,000	Over 1000	
<b>FINANCIAL EFFICIENCY</b>							
Turnover Ratio	Ratio	0.18	0.25	0.25	0.23	0.31	0.26
<b>PROFITABILITY</b>							
Net Profit Margin	%	-27.88	-5.14	7.97	-11.11	7.33	1.80
Return On Investment	%	-5.06	-1.29	1.98	-2.57	2.31	0.48
Return On Equity	%	-16.16	-11.29	-6.44	-14.29	-5.88	-8.96
Rate of Growth In Equity	%	-3.31	-4.71	-4.31	-6.69	-2.43	-4.12

smallest size farms and increased to .31 for the farms in the Over 1,000 acres size class. Net Profit Margins, Return On Investment, and Return On Equity all increased as farm size increased except for the 751-1000 acre size group. Net Profit Margin on all farms averaged 1.80 percent, but was negative for the Up To 250 and 251-500 acre size classes and 751-1000 size classes. A similar pattern resulted for Return On Investment; the average was .48 percent, but the two smallest size classes and the 751-1000 size group again had negative returns. On Return On Equity, all size classes had negative returns, but the smallest farms had the poorest returns. All the above measures relate to the profitability of the business as measured by the income statement. They indicate that many farms did not make a profit in 1984. A related measure, Rate of Growth In Equity, which is determined from the balance sheet, shows that all size classes experienced a loss in equity in 1984. This is a poorer showing than profits and is consistent with declining values in land and other assets during this period.

It is also interesting to look at a breakdown of the factors that must be covered by the Value of Farm Production. In an accounting definition, Value of Farm Production must equal Variable Expense plus Fixed Expense plus Net Farm Earnings. Examining the importance of these parts, Table 5 shows that Interest Expense accounted for 20%, Depreciation 14%, Other Operating Expenses 69%, and the residual, Net Farm Earnings, were negative at (3%). But of additional interest is the distribution by farm size class. Other Operating Expense was about 70% on all but the 501-750 acre class. But interest and depreciation were higher for the smaller farm size classes and Net Farm Earnings

lower. So part of the problem of low profits on the smaller farms may be a result of overinvestment, resulting in higher interest and depreciation expense.

### Efficiency and Cost Measures

Looking at Value of Crop Production and Value of Total Production Per Tillable Acre, the small farms had the largest values, \$282 compared to \$225 for the average of all farms. Apparently farms in the small size class operated their smaller

Table 6: Efficiency Measures And Cost Per Tillable Acre On 167 Cash Grain Farms By Acres of Cropland, Ohio, 1984.

Efficiency Measures	FARM SIZE IN ACRES OF CROPLAND						All Farms
	Unit	Up To 250	251-500	501-750	751-1,000	Over 1000	
PRODUCTION EFFICIENCY PER TILLABLE ACRE							
Value of Crop Production/T.A.\$/A		\$282.50	\$214.93	\$221.30	\$216.97	\$228.58	\$224.90
Value of Total Prod./T.A.	\$/A	\$311.50	\$251.88	\$269.02	\$278.99	\$283.64	\$275.27
Variable Expense Per T.A.	\$/A	\$190.40	\$138.98	\$133.82	\$146.96	\$147.63	\$143.90
Fixed Expense Per T.A.	\$/A	\$176.22	\$128.50	\$136.50	\$160.23	\$135.73	\$139.83
Total Expense Per T.A.	\$/A	\$366.61	\$267.48	\$270.32	\$307.19	\$283.36	\$283.73
Machinery Investment/T.A.	\$/A	\$306.91	\$201.68	\$180.87	\$207.50	\$158.71	\$183.66
Machinery Cost Per T.A.							
Repair Machinery	\$/A	\$15.50	\$12.91	\$14.01	\$12.50	\$12.70	\$13.19
Custom Hire	\$/A	\$9.65	\$3.36	\$3.30	\$2.68	\$2.69	\$3.21
Fuel & Lube Cost	\$/A	\$21.08	\$16.30	\$17.65	\$15.65	\$16.70	\$16.93
Equipment Depreciaton	\$/A	\$42.41	\$28.92	\$26.91	\$34.44	\$26.30	\$28.60
Machinery Invest @7.5%	\$/A	\$23.02	\$15.13	\$13.57	\$15.56	\$11.90	\$13.77
Machinery Cost Per T.A.	\$/A	\$111.66	\$76.63	\$75.44	\$80.83	\$70.29	\$75.70
Seed & Plant Cost Per T.A.	\$/A	\$20.01	\$15.33	\$13.32	\$15.38	\$16.10	\$15.24
Fert. & Lime Cost Per T.A.	\$/A	\$53.72	\$33.63	\$35.17	\$37.70	\$38.40	\$37.22
Spray & Chem Cost Per T.A.	\$/A	\$27.03	\$20.56	\$17.31	\$17.00	\$19.72	\$19.05
CAPITAL INVESTMENT							
Feed & Crop Capital	\$	\$24,591	\$48,776	\$79,536	\$96,252	\$189,670	\$86,294
Livestock Capital	\$	\$10,878	\$11,370	\$14,362	\$17,443	\$14,035	\$13,383
Machinery Capital	\$	\$49,720	\$78,855	\$110,333	\$179,076	\$219,654	\$121,583
Land & Building Cap	\$	\$175,446	\$233,082	\$414,279	\$687,613	\$727,698	\$422,371
Other Capital	\$	\$17,691	\$20,774	\$40,587	\$60,854	\$95,400	\$44,692
TOTAL FARM ASSETS	\$	\$278,326	\$392,857	\$659,097	\$1,041,238	\$1,246,457	\$688,323

farms more intensively. Data on type of crop mix was not available, to determine the reason for this difference. But the higher returns were not enough to offset the higher variable and fixed expense per acre incurred by these small farms.

In addition, the Up to 250 acre farms had the highest machinery investment (\$307) and machinery cost (\$112) per tillable acre of all the groups. Per acre machinery investment and machinery cost declined as the farms get larger in size except for the 751-1000 acre farms, where they increase slightly. The Over 1000 acre farms have the lowest machinery investment (\$159) and machinery cost (\$76) per tillable acre. The Up to 250 acre farms have the highest seed, plant, fertilizer, lime, spray, and chemical costs per acre (\$101), but they also have a considerably higher crop value per acre (\$282). The Over 1000 acre farms had the second highest crop value per acre (\$229), while incurring only average input costs per acre. The 751-1000 acre farms had slightly less crop value per acre (\$217) than did the 501-750 acre farms (\$221) although they had similar input costs per acre. The Up to 250 acre farms had the highest variable, fixed and total expense per tillable acre. The 251-500 and 501-750 had the lowest total expense per acre. The 751-1000 acre farms had considerably higher fixed expense per acre (\$160) than either the 501-750 acre farms (\$136) or the Over 1000 acre farms (\$136).

The section on Machinery Cost Per Tillable Acre, gives data on field cost per acre for cash grain farms. Machinery repair costs averaged just over \$13 per acre, and varied from \$12.50 to \$15.50 between size classes. Fuel and lube costs averaged just under \$17 per tillable acre, with a low of \$15.65 and a high of \$21.08, for the size classes. Ownership costs, depreciation and interest, averaged \$42 per tillable acre, ranging from \$38 for the Over 1000 size class to \$65 per acre for the Up to 250 acre class. Little custom work was hired by these farms, averaging only \$3.21 per acre.

## HIGHLIGHTS -- CASH GRAIN FARMS BY DEBT TO ASSET RATIO CLASSES

Tables 7 through 12 give similar information for the 167 cash grain farms sorted by debt to asset ratios. The two middle classes, farms with 30 to 70 percent debt to asset ratios, account for about two-thirds of the farms (Table 7). However, 32 or 19 percent of the farms have a D/A ratio of 71 percent or more. The farms in the 71 Plus class have lower yields, fewer tillable acres, and a higher percentage of cash rented acres.

Table 7: Number of Farms, Crop Yields, and Measures of Size for 167 Grain Farms By Debt to Asset Ratios, Ohio 1984.

Size Characteristics	Unit	DEBT AS A PERCENTAGE OF ASSETS				
		Up To 30	31-50	51-70	71 Plus	All Farms
NUMBER OF FARMS	Number	29	54	52	32	167
TOTAL TILLABLE ACRES	Acres	579	646	745	631	662
TOTAL LABOR USED	\$	1.7	1.7	1.4	1.3	1.6
VALUE OF FARM PRODUCTION	\$	\$138,407	\$191,413	\$216,997	\$149,934	\$182,230
BALANCE SHEET DATA						
Total Assets	\$1,000	685.9	811.9	838.3	555.8	749.2
Total Liabilities	\$1,000	150.8	336.2	478.6	454.4	371.1
Total Equity	\$1,000	535.1	475.7	359.7	101.4	378.1
CROP YIELDS						
Corn	Bu./A.	122	127	125	110	123
Soybeans	Bu./A.	40	38	39	34	38
Wheat	Bu./A.	49	49	48	44	48
PERCENT OF TILLABLE ACRES						
Owned	Percent	32	33	32	24	31
Cash Rented	Percent	41	44	43	58	46
Share Rented	Percent	27	22	25	17	23

Farms in the Up To 30 class showed positive Net Farm Earnings (Table 8). However, all classes had negative Total Net Earnings. Farms with a D/A ratio of Up To 30 had a positive change in equity for the year, while the rest of the farms had negative equity changes.

Table 8: Income, Expense and Measures of Earnings for 167 Cash Grain Farms  
By Debt to Asset Ratios, Ohio, 1984.

Financial Characteristics	Unit	DEBT AS A PERCENTAGE OF ASSETS				
		Up To 30	31-50	51-70	71 Plus	All Farms
<b>INCOME</b>						
Total Cash Income	\$	\$152,890	\$215,565	\$242,724	\$164,189	\$203,295
Other Income & Inv. Changes	\$	(14,483)	(24,152)	(25,727)	(14,255)	(21,065)
VALUE OF FARM PRODUCTION	\$	\$138,407	\$191,413	\$216,997	\$149,934	\$182,230
<b>EXPENSE</b>						
Total Variable Exp	\$	\$76,242	\$101,465	\$108,685	\$80,186	\$95,259
Total Fixed Expense	\$	\$57,901	\$92,434	\$112,008	\$92,623	\$92,569
TOTAL FARM EXPENSE	\$	\$134,143	\$193,899	\$220,693	\$172,809	\$187,828
<b>EARNINGS</b>						
Net Farm Earnings	\$	\$4,264	(\$2,486)	(\$3,696)	(\$22,875)	(\$5,598)
Net Non-Farm Income	\$	\$11,903	\$11,467	\$10,809	\$9,010	\$10,867
NET EARNINGS	\$	\$16,167	\$8,981	\$7,113	(\$13,865)	\$5,269
Operator Labor Draw	\$	\$19,040	\$21,519	\$20,905	\$13,938	\$19,445
Income Tax	\$	\$2,257	\$1,634	\$1,297	\$361	\$1,393
TOTAL NET EARNINGS	\$	(\$5,130)	(\$14,172)	(\$15,089)	(\$28,164)	(\$15,569)
NET FARM EARNINGS	\$	\$4,264	(\$2,486)	(\$3,696)	(\$22,875)	(\$5,598)
RETURN TO UNPAID LABOR & MGT	\$	(\$27,842)	(\$31,028)	(\$25,278)	(\$28,959)	(\$28,284)
RETURN TO INVESTMENT	\$	(\$9,479)	\$1,278	\$19,525	(\$8,178)	\$3,283
RETURN TO EQUITY	\$	(\$23,578)	(\$33,514)	(\$28,974)	(\$51,834)	(\$33,882)

Table 9: Income Statement for 167 Cash Grain Farms By Debt to Asset Ratio, Ohio, 1984.

INCOME STATEMENT	Unit	DEBT AS A PERCENTAGE OF ASSETS				
		Up To 30	31-50	51-70	71 Plus	All Farms
<b>CASH INCOME</b>						
Crops	\$	\$124,311	\$156,225	\$172,737	\$119,991	\$148,882
Hogs	\$	\$5,197	\$3,688	\$22,152	\$15,724	\$12,006
Dairy Products	\$	\$0	\$4,233	\$1,449	\$438	\$1,904
Dairy	\$	\$0	\$673	\$260	\$181	\$333
Beef	\$	\$4,182	\$10,197	\$9,521	\$9,579	\$8,824
Other Farm Income	\$	\$19,200	\$40,549	\$36,605	\$18,276	\$31,346
<b>TOTAL CASH INCOME</b>	<b>\$</b>	<b>\$152,890</b>	<b>\$215,565</b>	<b>\$242,724</b>	<b>\$164,189</b>	<b>\$203,295</b>
Resale Purchases	\$	(\$5,387)	(\$17,817)	(\$18,547)	(\$7,392)	(\$13,888)
Breeder L.S. purc	\$	(\$9)	(\$185)	(\$638)	(\$373)	(\$331)
L.S. Inven. Chang	\$	(\$434)	(\$946)	\$2,666	(\$5,319)	(\$570)
Cr & Feed Inv. Ch	\$	(\$8,782)	(\$4,180)	(\$9,813)	(\$3,278)	(\$6,560)
Acct Rec Change	\$	\$111	(\$987)	\$1,048	\$1,807	\$373
Net Non-Csh F Inc	\$	\$18	\$62	\$30	\$249	\$80
L.S Payb/Fut Chan	\$	\$0	(\$99)	(\$473)	\$51	(\$169)
<b>VALUE OF FARM PROD.</b>	<b>\$</b>	<b>\$138,407</b>	<b>\$191,413</b>	<b>\$216,997</b>	<b>\$149,934</b>	<b>\$182,230</b>
<b>EXPENSES</b>						
<b>Variable Expense</b>						
Wages	\$	\$6,546	\$8,773	\$7,516	\$4,173	\$7,114
Repair Machinery	\$	\$8,266	\$9,789	\$9,547	\$6,053	\$8,733
Feed	\$	\$2,152	\$3,150	\$11,134	\$4,890	\$5,796
Seed & Plants	\$	\$7,876	\$10,333	\$11,060	\$10,093	\$10,087
Fertilizer & Lime	\$	\$20,389	\$24,863	\$27,231	\$23,887	\$24,637
Spray & Chemicals	\$	\$10,160	\$14,157	\$14,092	\$9,813	\$12,610
Custom Hire	\$	\$2,904	\$1,679	\$2,436	\$1,650	\$2,122
Supplies	\$	\$1,992	\$3,928	\$1,165	\$2,377	\$2,435
Breeding	\$	\$6	\$41	\$1	\$11	\$17
Vet & Medicine	\$	\$158	\$254	\$447	\$140	\$276
Fuel & Lube	\$	\$9,570	\$11,570	\$13,117	\$8,983	\$11,209
Utilities	\$	\$1,606	\$1,675	\$2,783	\$1,302	\$1,937
Marketing	\$	\$241	\$651	\$337	\$228	\$401
Storage	\$	\$880	\$1,416	\$1,418	\$1,057	\$1,255
Other Than Above	\$	\$3,496	\$9,186	\$6,401	\$5,529	\$6,630
<b>TOTAL VARIABLE EXPENSE</b>	<b>\$</b>	<b>\$76,242</b>	<b>\$101,465</b>	<b>\$108,685</b>	<b>\$80,186</b>	<b>\$95,259</b>
<b>Fixed Expenses</b>						
Interest	\$	\$14,099	\$34,792	\$48,499	\$43,656	\$37,165
Taxes	\$	\$2,556	\$2,633	\$3,536	\$2,287	\$2,835
Lease Payments	\$	\$16,273	\$22,692	\$27,447	\$26,104	\$23,712
Insurance	\$	\$2,323	\$3,253	\$3,193	\$2,604	\$2,948
Bldg. Repairs	\$	\$694	\$780	\$1,856	\$603	\$1,066
Bldg. Depreciation	\$	\$4,668	\$6,317	\$7,399	\$3,939	\$5,912
Equip. Depreciaton	\$	\$17,288	\$21,967	\$20,078	\$13,430	\$18,931
<b>TOTAL FIXED EXPENSE</b>	<b>\$</b>	<b>\$57,901</b>	<b>\$92,434</b>	<b>\$112,008</b>	<b>\$92,623</b>	<b>\$92,569</b>
<b>TOTAL FARM EXPENSE</b>	<b>\$</b>	<b>\$134,143</b>	<b>\$193,899</b>	<b>\$220,693</b>	<b>\$172,809</b>	<b>\$187,828</b>
<b>NET FARM EARNINGS</b>	<b>\$</b>	<b>\$4,264</b>	<b>(\$2,486)</b>	<b>(\$3,696)</b>	<b>(\$22,875)</b>	<b>(\$5,598)</b>

The 71 Plus class of farms lost \$26,500 in equity in 1984 (Table 10). At this rate, their total equity of \$101,400 would be gone within 4 years! Other financial performance measures also indicate the financial distress these farms are experiencing. Their Current Ratio is only .97, their D/A ratio is .82, and the Leverage Ratio is 4.48, meaning loans are equal to 4 1/2 times their equity.

Table 10: Balance Sheet Data On 167 Cash Grain Farm By Debt to Asset Ratios, Ohio, 1984.

BALANCE SHEET INFORMATION	Unit	DEBT AS A PERCENTAGE OF ASSETS				
		Up To 30	31-50	51-70	71 Plus	All Farms
<b>BALANCE SHEET DATA</b>						
Current Assets	\$1,000	111.9	134.7	147.1	106.0	129.1
Current Liabilities	\$1,000	51.4	102.9	130.7	109.6	103.9
Current Equity	\$1,000	60.5	31.8	16.4	-3.6	25.2
Intermediate Assets	\$1,000	146.6	174.6	150.7	121.2	152.1
Inter. Liabilities	\$1,000	24.6	56.8	51.5	91.8	56.3
Inter. Equity	\$1,000	122.0	117.8	99.2	29.4	95.8
Fixed Assets	\$1,000	427.4	502.6	540.5	328.6	468.0
Fixed Liabilities	\$1,000	74.8	176.5	296.4	253.0	210.9
Fixed Equity	\$1,000	352.6	326.1	244.1	75.6	257.1
Total Assets	\$1,000	685.9	811.9	838.3	555.8	749.2
Total Liabilities	\$1,000	150.8	336.2	478.6	454.4	371.1
Total Equity	\$1,000	535.1	475.7	359.7	101.4	378.1
Change in Equity, 1983-4	\$1,000	11.3	-13.6	-17.5	-26.5	-13.0
<b>FINANCIAL PERFORMANCE MEASURES</b>						
<b>Liquidity Ratios</b>						
Current Ratio (CA/CL)	Ratio	2.18	1.31	1.13	0.97	1.24
CurrLiab/TotLiab (CL/TL)	Ratio	0.34	0.31	0.27	0.24	0.28
Inter. (CA+IA)/(CL+IL)	Ratio	3.40	1.94	1.63	1.13	1.76
<b>Solvency Ratios</b>						
Debt/Asset Ratio	Ratio	0.22	0.41	0.57	0.82	0.50
Equity Ratio (TE/TL)	Ratio	0.78	0.59	0.43	0.18	0.50
Leverage (TL/TE)	Ratio	0.28	0.71	1.33	4.48	0.98
<b>Profitability</b>						
Net Farm Earnings as % of Average Farm Assets	%	0.70	-0.34	-0.46	-4.46	-0.81

In table 11, the farms with the higher debt to asset ratios had the highest Turnover ratio. Farms in the 51-70 D/A class had the highest Net Profit Margin at 9.0% and the highest ROI at 2.43%. But farms in the 71 Plus class had the poorest ROE and Rate of Growth in Equity at -51.12% and -27.76%, respectively, far from the average -8.96% ROE and -4.12% Rate of Growth in Equity. Again, these farms will be bankrupt in 4 years if they continue to lose equity at an annual rate of minus 28 percent.

Table 11: Measures of Financial Efficiency On 167 Cash Grain Farms by Debt to Asset Ratio, Ohio, 1984.

Efficiency Measures	Unit	DEBT AS A PERCENTAGE OF ASSETS				
		Up To 30	31-50	51-70	71 Plus	All Farms
<b>FINANCIAL EFFICIENCY</b>						
Turnover Ratio	Ratio	0.23	0.26	0.27	0.29	0.26
<b>PROFITABILITY</b>						
Net Profit Margin	%	-6.85	0.67	9.00	-5.45	1.80
ROI	%	-1.57	0.18	2.43	-1.59	0.48
ROE	%	-4.41	-7.05	-8.06	-51.12	-8.96
Rate of Growth in Equity	%	-0.96	-2.98	-4.20	-27.76	-4.12
<b>EXPENSE AND EARNINGS AS A PERCENT OF VALUE OF FARM PRODUCTION</b>						
Interest	%	10.19	18.18	22.35	29.12	20.39
Depreciation	%	15.86	14.78	12.66	11.58	13.63
Net Farm Earnings	%	3.08	-1.30	-1.70	-15.26	-3.07
Other Operating Expense	%	70.87	68.35	66.69	74.56	69.04
Total	%	100.00	100.00	100.00	100.00	100.00
<b>TOTAL EXPENSE AS A PERCENTAGE OF VALUE OF FARM PRODUCTION</b>						
Variable Expense	%	55.09	53.01	50.08	53.48	52.27
Fixed Expense	%	41.83	48.29	51.62	61.78	50.80
Total	%	96.92	101.30	101.70	115.26	103.07

Interest as a percent of value of farm production is higher for the higher D/A classes, up to 29% for the 71 Plus group, compared to an average of 20.39% for all farms. However, depreciation was inversely related to D/A ratio, with a greater percent accounted for by depreciation on farms with low D/A ratios. Financially strapped operations have probably not spent much on capital investment on recent years. Variable expenses were fairly constant across all categories but fixed expenses ranged from a low of 42% in the Up to 30 D/A group to a high of 62% in the 71 Plus D/A group with an average of 51%.



In table 12, the 31-50 debt to asset group had the highest Values of Crop (and Total) Production per tillable acre at \$242 and \$296 per acre, respectively. The 71 Plus D/A group had the lowest Value of Crop Production per tillable acre, Value of Total Production per tillable acre, Machinery Cost and Investment per tillable acre, and Spray and Chemical Cost per tillable acre. All of these may be related to attempts to pare costs, while remaining in business. The 31-50 D/A group had the highest Machinery Cost and Machinery Investment per acre, but they also had the highest crop and total production value per acre. The 71 Plus D/A group also had considerably less Total Farm Assets with only \$513,389 compared to an average of \$688,323.

Table 12: Efficiency Measures and Cost per Tillable acre on 167 Cash Grain Farms by Debt to Asset Ratios, Ohio, 1984.

Efficiency Measures	Unit	DEBT AS A PERCENTAGE OF ASSETS				
		Up To 30	31-50	51-70	71 Plus	All Farms
PRODUCTION EFFICIENCY PER TILLABLE ACRE						
Value of Crop Prod./T.A.	\$/A	\$214.70	\$241.83	\$231.86	\$190.16	\$224.90
Value of Total Prod./T.A.	\$/A	\$239.04	\$296.30	\$291.27	\$237.61	\$275.27
Machinery Investment/T.A.	\$/A	\$188.12	\$211.86	\$171.69	\$153.73	\$183.66
Machinery Cost Per T.A.						
Repair Machinery	\$/A	\$14.28	\$15.15	\$12.81	\$9.59	\$13.19
Custom Hire	\$/A	\$5.02	\$2.60	\$3.27	\$2.61	\$3.21
Fuel & Lube Cost	\$/A	\$16.53	\$17.91	\$17.61	\$14.24	\$16.93
Equip. Depreciaton	\$/A	\$29.86	\$34.00	\$26.95	\$21.28	\$28.60
Mchy Invest @7.5%	\$/A	\$14.11	\$15.89	\$12.88	\$11.53	\$13.77
Machinery Cost per T.A.	\$/A	\$79.79	\$85.56	\$73.52	\$59.26	\$75.70
Seed & Plant Cost Per T.A.	\$/A	\$13.60	\$16.00	\$14.85	\$16.00	\$15.24
Fert. & Lime Cost Per T.A.	\$/A	\$35.21	\$38.49	\$36.55	\$37.86	\$37.22
Spray & Chem Cost Per T.A.	\$/A	\$17.55	\$21.91	\$18.92	\$15.55	\$19.05
CAPITAL INVESTMENT						
Feed & Crop Capital	\$	\$81,761	\$87,898	\$98,823	\$67,337	\$86,294
Livestock Capital	\$	\$6,810	\$11,098	\$19,091	\$13,921	\$13,383
Machinery Capital	\$	\$108,920	\$136,860	\$127,906	\$97,001	\$121,583
Land & Building Cap	\$	\$371,719	\$449,719	\$501,814	\$293,030	\$422,371
Other Capital	\$	\$34,113	\$41,081	\$55,937	\$42,100	\$44,692
TOTAL FARM ASSETS	\$	\$603,323	\$726,656	\$803,571	\$513,389	\$688,323

## DISTRIBUTION OF FARMS BY SIZE AND DEBT TO ASSET CLASS

The number of farms in each category sorted by both tillable acres and debt to asset ratios is shown in Table 13. Of primary interest is whether any size class of farms is experiencing the greatest financial difficulty. Thus we reported the data with emphasis on percent of farms by size class in each D/A class. The Up To 250 acre class makes up 21% of the D/A group, but comprise only 14% of all farms. The Over 1000 acre class makes up only 10% of the up to 30 D/A class, compared to the 19% they represent of all cash grain farms summarized. Thus, the financially healthiest farms, those with a D/A ratio of Up to 30 percent, are overrepresented by small farms and underrepresented by large farms.

In the 31 to 50 D/A class, the 251-500 acre size farms are overrepresented, while the 501-750 acre farms are underrepresented. Moving up to the 51 to 70 percent D/A class, the Over 1000 acre class is overrepresented with 27% compared to 19%, and the Up To 250 acre class is underrepresented with only 8% compared to an overall average of 14%. Thus as the debt to asset ratio increases through these 3 classes, we find a tendency for the larger farms to have the heavier debt loads.

But when the farms with the worst D/A ratios are examined, there appears to be equal pain for all farm sizes. Each farm size is represented within 3% of its proportion in the total farm category. So initially farm debt appears to increase as farm size increases, but the very worst financial situations appeared to be equally prevalent in all sizes of Ohio cash grain farms included in this summary.

Table 13: Distribution of 167 Cash Grain Farms By Tillable Acres and Debt to Asset Ratio, Ohio, 1984.

DEBT to ASSET RATIO	FARM SIZE IN ACRES OF CROPLAND					Total
	Up To 250	251-500	501-750	751-1,000	Over 1000	
Up To 30	6 (21)	7 (24)	10 (34)	3 (10)	3 (10)	29 (100)
31 to 50	8 (15)	17 (31)	13 (24)	7 (13)	9 (17)	54 (100)
51 to 70	4 (8)	11 (21)	18 (35)	5 (10)	14 (27)	52 (100)
71 Plus	5 (16)	8 (25)	11 (34)	3 (9)	5 (16)	32 (100)
Total	23 (14)	43 (26)	52 (31)	18 (11)	31 (19)	167 (100)

Note: Number in brackets represent the percent of row total. Totals may not add due to rounding.

GLOSSARY ----- Definitions arranged in alphabetical order.

CURRENT RATIO: Total current assets divided by total current liabilities.

DEBT to ASSET RATIO: Total liabilities divided by total assets.

EQUITY RATIO: Total equity divided by total assets.

INTERMEDIATE CAPITAL RATIO: Current assets plus intermediate assets all divided by the sum of current liabilities and intermediate liabilities.

LEVERAGE RATIO: Total liabilities divided by total equity.

NET CAPITAL RATIO: Total assets divided by total equity.

NET FARM EARNINGS: Value of farm production minus total farm expense (including variable and fixed expense).

NET NON-FARM INCOME: Amount reported as off-farm income minus off-farm expenses other than operator draw or income tax.

NET PROFIT MARGIN: Net farm earnings plus interest paid minus unpaid labor all divided by value of farm production.

OPERATING EXPENSE: Total farm expense minus interest paid and depreciation expense.

OPERATOR LABOR DRAW: Amount reported as withdrawn from the cash flow for personal use.

RATE of GROWTH IN EQUITY: Net earnings divided by total equity.

RETURN to EQUITY: Net farm earnings minus unpaid labor and management.

ROE RATIO: Return to Equity divided by average total farm assets.

RETURN to INVESTMENT: Net Farm Earnings plus interest paid minus unpaid labor and management.

ROI RATIO: Return on Investment divided by average total farm assets.

RETURN to UNPAID LABOR and MANAGEMENT: Net farm earnings minus 6% of total assets.

TOTAL LABOR USED: The number of people working on a farm, one Man Year Equivalent (MYE) is equal to one person working 3000 hours per year.

TOTAL NET EARNINGS: Total farm income plus non-farm income minus total farm expense and non-farm expense other than operator draw and income tax.

TURNOVER RATIO: Value of farm production divided by average farm assets.

VALUE of FARM PRODUCTION: The amount of cash farm income (including breeding livestock and resale sales) plus crop and livestock inventory changes and accounts receivable changes, minus breeding livestock and resale purchases.