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Economic Study Report S72-1 February 1972

1968-1970

CASH CROP FARMS IN SOUTHERN MINNESOTA

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INTRODUCTION

Approximately one-third of the cash receipts of farms in Minnesota come from the sale of crops.[2] Many farmers organize their farm businesses around cash crops and one or more livestock enterprises. Others confine their farming activities to the production of crops alone. This report is based on a study of farms in southern Minnesota where cash crops constitute the major source of income.

The major objectives of this study are (1) to present data in regard to capital managed, costs and returns, and land utilization for cash crop farms

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2. 1970 Farm Cash Income--Minnesota, Minnesota Crop and Livestock Reporting Service, Minnesota Department of Agriculture, August 27, 1971.

The authors are deeply indebted to Janet Otis and Dorothy Spreck for their assistance in the preparation of this report.

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and (2) to compare and analyze factors which might account for some of the differences in earnings among farmers. The number of farm business records included during the years of this study are shown in table 1. Willmar, Jackson, Mankato, Austin, and Winona vocational-technical schools, and the Southeastern and Southwestern Minnesota Farm Management Associations provided the farm record information. Farms were categorized into three groups according to size--small (less than 380 acres), medium (380-499 acres), and large (over 500 acres). Each of the three groups were subdivided into two parts, according to labor earnings.

For the purpose of this study, a farm was considered "specialized" when 80 percent or more of the cash income came from the crop enterprise. Cash income, other than from crops, includes sales of livestock and livestock products, work off the farm and miscellaneous farm income.

This report enables farm operators, educators, researchers, credit agency personnel and others to analyze and compare specific information about costs and returns from individual farm operations. The results shown in this report may yield ideas that can be examined for feasibility in the reader's own business. It is suggested that crop farmers copy figures from their own business records into the appropriate blank columns so that comparisons can be made with the most relevant averages.

Table 1. Number of Farms Included

Group	1968	1969	1970	Average of 3 years
Less than 380 acres	18	21	22	20
380 - 499 acres	21	21	18	20
500 acres and over	20	21	33	25
Total	59	63	73	65

CAPITAL MANAGED

The average value of capital used per farm for each size category is reported in table 2. These data represent values as reported by farmers in their farm business records. To make records comparable on a whole farm basis, landlords' shares are included. Land is valued at cost and is not adjusted for price inflation which has occurred since its purchase. Machinery and real estate improvements are valued at cost less depreciation on the basis of estimated life. Capital managed varied considerably, with the larger acreage farms associated with the larger total capital investment. Variations in investments had a range of $193,079, with a low investment of $85,629 and a high investment of $278,708, as of December 31.

Table 3 shows investment per tillable acre. Small farms had an average investment per tillable acre of $373, while the larger than 500 acre farms showed a $391 per tillable acre investment. Owners of larger farms probably have had some expansion by means of land purchases at more current price levels. Average value of land and farm buildings (not including dwelling) was about $300 per acre. An additional $100 per acre would more adequately reflect current prices of real estate.

Table 2. Capital Managed on Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres: 1/2 high in labor earnings	Less than 380 acres: Average	Less than 380 acres: 1/2 low in labor earnings
1. Total acres per farm	_____	492	308	301	294
2. Tillable acres per farm	_____	447	284	270	256
3. Number of workers	_____	1.32	1.17	1.15	1.13
Average capital managed as of January 1					
4. All livestock	$_____	$ 2042	$ 1272	$ 1090	$ 913
5. Crops, seed, feed	_____	18779	12505	11282	10129
6. Auto & truck (farm share)	_____	2180	1640	1676	1722
7. Tractors & crop machinery	_____	16559	12352	10778	9236
8. Livestock equipment	_____	449	526	446	360
9. Farm buildings*	_____	18381	11134	11463	11757
10. Land	_____	116238	77321	63779	50537
11. Total capital managed	$_____	$174628	$116750	$100514	$84654
Average capital managed as of December 31					
12. Total capital managed	$_____	$179832	$122298	$103761	$85629

* Not including value of dwelling.

Table 3. Capital Managed Per Tillable Acre on Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres: 1/2 high in labor earnings	Less than 380 acres: Average	Less than 380 acres: 1/2 low in labor earnings
1. All livestock	$_____	$ 5	$ 5	$ 4	$ 3
2. Crops, seed, feed	_____	43	44	42	40
3. Auto & truck	_____	5	6	6	7
4. Tractors & crop machinery	_____	38	43	40	36
5. Livestock equipment	_____	1	2	2	1
6. Farm buildings	_____	41	39	42	46
7. Land	_____	256	272	237	198
8. Total capital per till. acre	$_____	$ 389	$ 411	$ 373	$ 331

Table 2. Capital Managed on Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earninge	Average	1/2 low in labor earnings
1.	439	439	440	781	735	690
2.	405	404	402	710	667	626
3.	1.20	1.23	1.27	1.53	1.57	1.60
	Average capital managed as of January 1					
4.	$ 2147	$ 1890	$ 1661	$ 3883	$ 3145	$ 2420
5.	21339	18845	16524	24298	26211	28139
6.	2510	2320	2136	2484	2544	2606
7.	15394	15744	16094	22822	23154	23514
8.	393	382	372	481	519	566
9.	16748	16347	15972	24486	27333	30082
10.	111648	106570	101541	190206	178366	167098
11.	$170179	$162098	$154300	$268660	$261272	$254425
	Average capital managed as of December 31					
12.	$176514	$167123	$158010	$278708	$268612	$259114

Table 3. Capital Managed per Tillable Acre on Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
1.	$ 5	$ 5	$ 4	$ 5	$ 5	$ 4
2.	53	47	41	34	39	45
3.	6	6	5	3	4	4
4.	38	39	40	32	34	38
5.	1	1	1	1	1	1
6.	41	40	40	35	41	48
7.	276	264	252	268	267	267
8.	$ 420	$ 402	$ 383	$ 378	$ 391	$ 407

EARNINGS STATEMENT

Cash receipts, expenses, labor earnings, net cash income and other items are presented in table 4. "Labor earnings" is that amount that would be left as a salary to the farm operator if he paid wages equivalent to that of a hired man for the labor of the family and made a charge of 5 3/4 percent interest on average capital managed. Labor earnings was related to size of business in terms of acres. Small farms showed average labor earnings of $5750, medium size farms $11,877, while the largest farms reported labor earnings of $13,131. Although this report covers a three-year period, one must remember that profitability will vary from year to year as weather and prices received for crops sold vary.

There were great variations in labor earnings within groups. For each size division, the top one-half in labor earnings showed well over $7000 above the lower group. The high one-half in labor earnings for farms of 500 acres and over had earnings of $20,598, while the bottom one-half of this group showed $5696 in earnings. Medium sized farms showed a difference of $10,282 in earnings between the top and bottom halves. The differences of acre size and total expense within individual size classes are small, when one compares this to the larger total receipts reported by the more efficient managers. Some of the labor earnings variation may also be attributable to differences in soil fertility and topography.

The cash statement is shown on the "per tillable acre basis" in table 5. One can note the uniform pattern of larger crop sales per tillable acre on the more profitable farms. The total per tillable acre expense of the top and bottom one-half in labor earnings does not vary significantly. Even within size groups, the maximum difference in total farm expense is $9.00 per

tillable acre. One should note that medium size farms have the highest labor earnings per tillable acre with $29. Small farms show per tillable acre earnings of $21, while large farms realize per tillable acre labor earnings of $20.

Table 4. Cash Statement for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS					
1. All livestock sold	$_____	$ 2971	$ 2241	$ 1732	$ 1235
2. Corn sold	_____	18430	11874	10655	9521
3. Other crops sold	_____	17362	10922	10184	9465
4. Other capital assets sold	_____	489	351	364	372
5. Income from work off farm	_____	1481	1866	1230	610
6. Miscellaneous farm income	_____	1546	1328	938	566
7. Total farm sales	$_____	$42279	$28582	$25103	$21769
8. Increase in farm capital	_____	5204	5548	3247	975
9. Family living from farm	_____	71	64	54	46
10. Total farm receipts	$_____	$47554	$34194	$28404	$22790
EXPENSES					
11. All livestock bought	$_____	$ 1021	$ 553	$ 512	$ 462
12. Miscel. livestock expense	_____	77	61	51	41
13. Feed bought	_____	844	784	493	208
14. Fertilizer bought	_____	4239	2051	2079	2113
15. Other crop expense	_____	4255	2597	2393	2191
16. Custom work hired	_____	913	651	806	964
17. Gas, oil, grease bought	_____	1586	1128	1069	1012
18. Repairs--auto, truck, tractors, crop machinery	_____	2151	1390	1376	1366
19. Repair--real estate	_____	317	193	209	223
20. Repair--livestock equip.	_____	45	66	40	14
21. Wages of hired labor	_____	1029	467	347	228
22. Electricity expense	_____	258	212	211	210
23. Real estate taxes	_____	2474	1596	1458	1328
24. General farm expense	_____	682	450	482	512
25. Total cash operating expense	$_____	$19891	$12199	$11526	$10872
26. Power & machinery bought	_____	4874	4131	3792	3476
27. Livestock equip. bought	_____	93	58	35	12
28. Buildings & RE improvements	_____	1904	1223	1131	1012
29. Total farm purchases	$_____	$26762	$17611	$16484	$15372
30. Decrease in farm capital	_____				
31. Interest on farm capital*	_____	10115	6852	5875	4920
32. Unpaid family labor	_____	376	258	284	307
33. Board for hired labor	_____	48	11	11	11
34. Total farm expenses	$_____	$37301	$24732	$22654	$20610
35. Labor earnings (line 10 - line 34)	$_____	$10253	$ 9462	$ 5750	$ 2180
36. Net cash income (line 7 - line 29)	$_____	$15517	$10971	$ 8619	$ 6397

* Approximately 5 3/4 percent.

Table 4. Cash Statement for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS						
1.	$ 3898	$ 2937	$ 2061	$ 4873	$ 4244	$ 3646
2.	22110	18924	15948	27340	25709	24071
3.	15288	15421	15573	29475	26481	23483
4.	231	226	220	780	878	983
5.	892	894	897	2457	2319	2181
6.	1129	1132	1130	2606	2569	2512
7.	$43548	$39534	$35829	$67531	$62200	$56876
8.	6335	5025	3710	10048	7340	4689
9.	78	101	121	60	58	56
10.	$49961	$44660	$39660	$77639	$69598	$61621
EXPENSES						
11.	$ 1473	$ 1210	$ 984	$ 1346	$ 1341	$ 1346
12.	45	60	74	104	120	137
13.	1013	733	470	1217	1307	1393
14.	3859	3723	3590	6890	6914	6916
15.	3920	3752	3597	6885	6620	6328
16.	998	830	666	1271	1104	931
17.	1347	1410	1471	2034	2280	2528
18.	1689	1924	2145	2976	3153	3334
19.	247	254	266	396	487	574
20.	12	17	23	83	78	72
21.	571	665	757	2437	2074	1717
22.	221	248	273	314	314	313
23.	2514	2368	2229	3910	3597	3296
24.	625	640	656	831	925	1016
25.	$18534	$17834	$17201	$30694	$30314	$29901
26.	3391	4128	4791	7497	6701	5924
27.	29	50	68	208	193	186
28.	756	1077	1385	2706	3504	4304
29.	$22710	$23089	$23445	$41105	$40712	$40315
30.						
31.	9909	9410	8925	15629	15059	14524
32.	129	229	320	199	618	1040
33.	35	55	74	108	78	46
34.	$32783	$32783	$32764	$57041	$56467	$55925
35.	$17178	$11877	$ 6896	$20598	$13131	$ 5696
36.	$20838	$16445	$12384	$26426	$21488	$16561

Table 5. Cash Statement on a Per Tillable Acre Basis for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS					
1. All livestock sold	$_____	$ 6	$ 8	$ 6	$ 5
2. Corn sold	_____	42	42	40	37
3. Other crops sold	_____	39	38	38	37
4. Other capital assets sold	_____	1	1	1	2
5. Income from work off farm	_____	4	7	5	3
6. Miscellaneous farm income	_____	3	5	3	2
7. Total farm sales	$_____	$ 95	$ 101	$ 93	$ 85
8. Increase in farm capital	_____	11	19	12	4
9. Family living from farm	_____	0	0	0	0
10. Total farm receipts	$_____	$ 106	$ 120	$ 105	$ 89
EXPENSES					
11. All livestock bought	$_____	$ 2	$ 2	$ 2	$ 2
12. Misc. livestock expense	_____	0	0	0	0
13. Feed bought	_____	2	3	2	1
14. Fertilizer bought	_____	9	7	8	8
15. Other crop expense	_____	10	9	9	8
16. Custom work hired	_____	2	2	3	4
17. Gas, oil, grease bought	_____	4	4	4	4
18. Repairs-auto, truck, tractors, crop machinery	_____	5	5	5	5
19. Repairs-real estate	_____	1	1	1	1
20. Repairs-livestock equipment	_____	0	0	0	0
21. Wages of hired labor	_____	2	2	1	1
22. Electricity expense	_____	0	1	1	1
23. Real estate taxes	_____	5	6	5	5
24. General farm expense	_____	2	1	2	2
25. Total cash operating expense	$_____	$ 44	$ 43	$ 43	$ 42
26. Power & machinery bought	_____	11	15	14	14
27. Livestock equipment bought	_____	0	0	0	0
28. Buildings & RE improvements	_____	4	4	4	4
29. Total farm purchases	$_____	$ 59	$ 62	$ 61	$ 60
30. Decrease in farm capital	_____				
31. Interest on capital mgd.	_____	23	24	22	19
32. Unpaid family labor	_____	1	1	1	1
33. Board for hired labor	_____	0	0	0	0
34. Total farm expenses	$_____	$ 83	$ 87	$ 84	$ 80
35. Labor earnings	$_____	$ 23	$ 33	$ 21	$ 9

Table 5. Cash Statement on a Per Tillable Acre Basis for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earning	Average	1/2 low in labor earnings
RECEIPTS						
1.	$ 10	$ 7	$ 5	$ 7	$ 6	$ 6
2.	54	47	40	38	38	38
3.	38	38	38	42	40	38
4.	0	1	1	1	1	1
5.	2	2	2	3	4	4
6.	3	3	3	4	4	4
7.	$ 107	$ 98	$ 89	$ 95	$ 93	$ 91
8.	16	12	9	14	11	7
9.	0	0	0	0	0	0
10.	$ 123	$ 110	$ 98	$ 109	$ 104	$ 98
EXPENSES						
11.	$ 4	$ 3	$ 2	$ 2	$ 2	$ 2
12.	0	0	0	0	0	0
13.	3	2	1	2	2	2
14.	10	9	9	10	10	11
15.	10	9	9	10	10	10
16.	2	2	2	2	2	2
17.	3	3	4	3	4	4
18.	4	5	5	4	5	5
19.	1	1	0	0	1	1
20.	0	0	0	0	0	0
21.	1	2	2	3	3	3
22.	0	0	1	0	0	0
23.	6	6	6	6	5	5
24.	2	2	2	1	1	2
25.	$ 46	$ 44	$ 43	$ 43	$ 45	$ 47
26.	8	10	12	11	10	10
27.	0	0	0	0	0	0
28.	2	3	3	4	5	7
29.	$ 56	$ 57	$ 58	$ 58	$ 60	$ 64
30.						
31.	25	23	22	22	23	23
32.	0	1	1	0	1	2
33.	0	0	0	0	0	0
34.	$ 81	$ 81	$ 81	$ 80	$ 84	$ 89
35.	$ 42	$ 29	$ 17	$ 29	$ 20	$ 9

RETURN ON INVESTMENT AND SELECTED RATIOS

Table 6 shows return on investment and various financial ratios. A charge of $7000 was assumed as a wage for the operator. It is difficult to estimate this figure as the more efficient managers probably could receive higher salaries in other business opportunities. At the same time, it is difficult to arrive at a difference in the value of operator's labor for the larger farms compared to the smaller farms. Therefore, this arbitrary figure will tend to overstate returns on investment on large operations.

A reasonable return on investment in addition to a competitive wage for labor and management is one of the goals of most farmers. One can determine the return to farm capital by subtracting the value of the operator's labor from the sum of labor earnings and interest on investment. The return to farm capital varied from an average of $4625 for small farms to a $21,190 average for the 500 acre and over farms. All crop farms averaged 7.5 percent return on capital managed. The top managers received a return which is equal to or above current interest rates for borrowed capital. Less efficient managers would find payments on borrowed capital difficult to make from these relatively low returns.

Net profit margins can be calculated by dividing total return to farm capital by total farm receipts. This important figure indicates the profit generated per dollar of product produced. Profit margins vary from .004 for the least efficient small farms to .51 for the more efficient 500 acres and over group.

Two useful expense ratios are also presented in table 6. Cash operating expense per $100 farm sales is a measure of overall cost control. It was generally stable over all size categories, averaging approximately $47 per

$100 of sales. Again, a significant difference is exhibited within size groups, with the top one-half in labor earnings displaying more effective cost control.

Total farm purchases per $100 of sales is the second expense ratio. This ratio may fluctuate from year to year on individual farms due to capital expenditures being included in total purchases. A similar trend is found here as was found in cash expenditures per $100 of sales.

Table 6. Return on Investment and Expense Ratios for Specialized Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
Return on Investment					
1. Labor earnings	$_____	$10253	$ 9462	$ 5750	$ 2180
2. Interest on investment	_____	10114	6852	5875	4920
3. Total (1+2)	$_____	$20367	$16314	$11625	$ 7100
4. Value of operator's labor	_____	7000	7000	7000	7000
5. Return to farm capital (3+4)	$_____	$13367	$ 9314	$ 4625	$ 100
6. Average capital managed	$_____	$177230	$119524	$102137	$85141
7. Return per dollar of capital managed (5÷6)	_____	7.5%	7.7%	4.5%	.1%
8. Total farm receipts	$_____	$37328	$34194	$28404	$22790
9. Asset turnover (8÷ 6)	_____	.21	.29	.27	.26
10. Net profit margin (5÷8)	_____	.36	.27	.16	.004
Expense Ratios					
11. Total farm sales	$_____	$42281	$28582	$25108	$21769
12. Total cash operating expense	$_____	$19891	$12199	$11526	$10872
13. Capital improvements	$_____	$ 6738	$ 5412	$ 4958	$ 4500
14. Total farm purchases	$_____	$26629	$17611	$16484	$15372
15. Cash expense per $100 sales 12÷11)	$_____	$ 47	$ 43	$ 46	$ 50
16. Farm purchases per $100 sales (14÷11)	$_____	$ 63	$ 62	$ 66	$ 71

Table 6. Return on Investment and Expense Ratios for Specialized Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
Return on Investment						
1.	$17178	$11877	$6896	$20598	$13131	$5696
2.	9909	9410	8925	15629	15059	14524
3.	$27087	$21287	$15821	$36227	$28190	$20220
4.	7000	7000	7000	7000	7000	7000
5.	$20087	$14287	$ 8821	$29227	$21190	$13220
6.	$173346	$164610	$156155	$273684	$264942	$256770
7.	11.0%	8.6%	5.6%	10.6%	8.0%	5.0%
8.	$39758	$34402	$29365	$56732	$49178	$41688
9.	.23	.21	.19	.21	.18	.16
10.	.50	.41	.30	.51	.43	.31
Expense ratios						
11.	$43548	$39534	$35829	$67531	$62200	$56876
12.	$18534	$17834	$17201	$30694	$30314	$29901
13.	$ 4176	$ 5255	$ 6244	$10411	$10001	$10811
14.	$22710	$23089	$23445	$41105	$40315	$40712
15	$ 43	$ 45	$ 48	$ 45	$ 49	$ 52
16.	$ 52	$ 58	$ 65	$ 61	$ 65	$ 72

EFFICIENCY IN USE OF CAPITAL AND LABOR

Table 7, showing efficiency in use of capital and labor, helps to explain the difference in returns to capital and labor. Tillable acres, work units, farm sales, and capital managed in total and per worker were greater on the larger farms than on the small farms. For example, each worker on the large farms operated 192 acres more than the workers on the smaller units. This caused an approximately $18,000 difference in farm sales per worker between these two size groups. To accomplish the level of efficiency shown here, each worker handled $80,400 more capital in the larger acreage farms than in the

Table 7. Efficiency in Use of Capital and Labor on Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
Size of Business					
1. Tillable acres	_____	447	284	270	256
2. Work units	_____	247	202	166	132
3. Total farm sales	$_____	$42279	$28582	$25103	$21769
Capital					
4. Total capital managed	$_____	$177230	$119524	$102137	$85141
5. Capital managed per worker	$_____	$136331	$ 99603	$ 85114	$77400
6. Capital managed per tillable acre	$_____	$ 388	$ 388	$ 340	$ 299
7. Investment in tractors and crop machinery	$_____	$ 16559	$ 12352	$ 10778	$ 9236
8. Investment in tractors and crop machinery per worker	$_____	$ 12738	$ 10293	$ 8982	$ 8396
Labor					
9. Number of workers	_____	1.3	1.2	1.2	1.1
10. Tillable acres per worker	_____	344	237	225	233
11. Work units per worker	_____	190	168	138	120
12. Farm sales per worker	$_____	$32522	$23818	$20919	$19790

small farms, with much of this added capital managed due to more land. Since these are essentially family farms, little labor was hired.

There was an average of $16,559 invested in tractors and crop machinery on these farms. Small farms averaged $10,800 as compared to $23,514 on large farms. Tractors and crop machinery investment per worker, however, did not show as great a variation between size of farm. It appears as if the operators of the large farms were able to handle the larger acreage partially by more tractors and machinery per worker, but a substantial portion probably is due to more work on the part of each worker.

Table 7. Efficiency in Use of Capital and Labor on Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
Size of Business						
1.	405	404	402	710	667	626
2.	228	221	215	363	353	344
3.	$43548	$39534	$35829	$67531	$62200	$56876
Capital						
4.	$173346	$164610	$156155	$273684	$264942	$256770
5.	$144455	$136175	$121285	$182456	$165588	$160481
6.	$ 428	$ 408	$ 388	$ 386	$ 397	$ 410
7.	$ 15394	$ 15744	$ 16094	$ 22822	$ 23154	$ 23514
8.	$ 12828	$ 13120	$ 12380	$ 15215	$ 14471	$ 14696
Labor						
9.	1.2	1.2	1.3	1.5	1.6	1.6
10.	337	336	309	473	417	391
11.	190	184	165	242	221	215
12.	$ 36290	$ 32945	$ 27560	$ 45021	$ 38875	$ 35547

ENTERPRISE STATEMENT

The data for earnings on an enterprise basis are presented in table 8 and are shown on the per tillable acre basis in table 9. Rather than stressing purchases and sales, the enterprise statement stresses net value produced and net expense. The net market value of crops produced less the cost of raising the crop (seed, fertilizer, chemicals and similar miscellaneous expenses) is the

Table 8. Earnings on Specialized Cash Crop Farms, Enterprise Statement, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS AND NET INCREASES					
1. All livestock	$_____	$ 1988	$ 1809	$ 1345	$ 890
2. Feed fed	_____	1429	1297	946	600
3. Return over feed	$_____	$ 559	$ 512	$ 399	$ 290
4. Crops and feed	_____	31978	22439	18702	15104
5. Income from labor off farm	_____	662	936	615	300
6. Miscellaneous farm income	_____	1546	1328	938	566
7. Total receipts	$_____	$34745	$25215	$20654	$16260
EXPENSES AND NET DECREASES					
8. Truck & auto	$_____	$ 1602	$ 1022	$ 1151	$ 1282
9. Electricity expense	_____	258	212	211	210
10. Tractors & crop machinery	_____	5598	3558	3644	3734
11. Livestock equipment	_____	150	139	106	71
12. Buildings, fencing	_____	1802	917	1032	1141
13. Miscel. livestock expense	_____	77	61	51	41
14. Labor*	_____	1734	946	894	841
15. Real estate taxes	_____	2474	1596	1458	1328
16. General farm expense	_____	682	450	482	512
17. Interest on capital managed	_____	10115	6852	5875	4920
18. Total expenses	$_____	$24492	$15753	$14904	$14080
19. Labor earnings	$_____	$10253	$ 9462	$ 5750	$ 2180

* Includes wages paid and value of board to hired labor, unpaid family labor and part of the payment for custom work hired.

return to crops.

Costs of operating each service enterprise (autos and trucks, tractors and crop machinery, etc.) are calculated in a similar manner.[3] Although the enterprise statement does not show purchases and sales, it more truly shows the value produced for the productive enterprise and expenses for the service enterprises.

With the help of the enterprise statement, one can better understand the

Table 8. Earnings on Specialized Cash Crop Farms, Enterprise Statement, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS AND NET INCREASES						
1.	$ 2478	$ 1882	$ 1333	$ 2864	$ 2737	$ 2622
2.	1636	1282	957	1879	2058	2250
3.	$ 842	$ 600	$ 376	$ 985	$ 679	$ 372
a.	37368	32279	27494	52169	44953	37817
5.	419	391	365	972	977	987
6.	1129	1132	1130	2606	2569	2512
7.	$39758	$34402	$29365	$56732	$49178	$41688
EXPENSES AND NET DECREASES						
8.	$ 1410	$ 1496	$ 1578	$ 2133	$ 2160	$ 2190
9.	221	248	273	314	314	313
10.	5109	5444	5759	7366	7706	8042
11.	109	121	131	231	222	216
12.	1614	1544	1491	2519	2831	3124
13.	45	60	74	104	120	137
14.	1024	1194	1353	3097	3113	3134
15.	2514	2368	2229	3910	3597	3296
16.	625	640	656	831	925	1016
17.	9909	9410	8925	15629	15059	14524
18.	$22580	$22525	$22469	$36134	$36047	$35992
19.	$17178	$11877	$ 6896	$20598	$13131	$ 5696

3. For methods of calculation, see Nodland, Truman R., "Know Your Farm Business," University of Minnesota Agricultural Extension Pamphlet 138, revised 1971.

Table 9. Enterprise Statement on a Per Tillable Acre Basis for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS AND NET INCREASES					
1. All livestock	$_____	$ 4	$ 6	$ 5	$ 4
2. Feed fed	_____	3	4	4	3
3. Return over feed	$_____	1	$ 2	$ 1	$ 1
4. Crops, feed	_____	73	79	70	59
5. Income from labor off farm	_____	1	3	2	1
6. Miscel. farm income	_____	3	5	3	2
7. Total farm receipts	$_____	$ 78	$ 89	$ 76	$ 63
EXPENSES AND NET DECREASES					
8. Truck and auto	$_____	$ 4	$ 4	$ 4	$ 5
9. Electricity expense	_____	0	1	1	1
10. Tractors & crop machinery	_____	13	13	14	15
11. Livestock equipment	_____	0	1	0	0
12. Buildings, fencing	_____	4	3	4	4
13. Miscel. livestock expense	_____	0	0	0	0
14. Labor	_____	4	3	3	3
15. Real estate taxes	_____	5	6	5	5
16. General farm expense	_____	2	1	2	2
17. Interest on capital managed	_____	23	24	22	19
18. Total expense	$_____	$ 55	$ 56	$ 55	$ 54
19. Labor earnings	$_____	$ 23	$ 33	$ 21	$ 9

difference in earnings per tillable acre. In this study, practically all of the difference is due to differences in value of crops produced. Table 9 shows that the most profitable of the small farms produced $20 more per tillable acre than the low one-half in labor earnings. Medium sized farms have a range of $24 in crop value produced between the top and bottom one-half in labor earnings. There is a $14 difference in crop value produced between the top and bottom labor earnings in the large farms. The total expense per tillable acre varies little between and within size groups.

Table 9. Enterprise Statement on a Per Tillable Acre Basis for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
RECEIPTS AND NET INCREASE						
1.	$ 6	$ 4	$ 3	$ 4	$ 4	$ 4
2.	4	3	2	3	3	4
3.	$ 2	$ 1	$ 1	$ 1	$ 1	$ 0
4.	92	80	68	74	67	60
5.	1	1	1	1	1	2
6.	3	3	3	4	4	4
7.	$ 98	$ 85	$ 73	$ 80	$ 73	$ 66
EXPENSES AND NET DECREASES						
8.	$ 3	$ 4	$ 4	$ 3	$ 3	$ 4
9.	0	0	1	0	0	0
10.	13	14	14	11	12	13
11.	0	0	0	0	0	0
12.	4	4	4	4	4	5
13.	0	0	0	0	0	0
14.	3	3	3	4	5	5
15.	6	6	6	6	5	5
16.	2	2	2	1	1	2
17.	25	23	22	22	23	23
18.	$ 56	$ 56	$ 56	$ 51	$ 53	$ 57
19.	$ 42	$ 29	$ 17	$ 29	$ 20	$ 9

CROP PROGRAM

Corn, soybeans, and the feed grain program represent the major use of land on cash crop farms in this study. These account for over 80 percent of the tillable acres. Table 10 shows the distribution of acres for the various crops grown.

Table 10. Distribution of Acres in Farm for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
1. Canning peas	_____	4.7	.7	1.7	2.5
2. Wheat	_____	5.9	3.2	3.6	3.9
3. Oats for grain	_____	16.1	5.9	6.8	7.7
4. Barley	_____	2.0	.9	1.7	2.6
5. Flax	_____	3.7		.9	1.7
6. Other small grain	_____	1.2	.6	3.1	5.7
7. Total small grain	_____	33.6	11.3	17.8	24.1
8. Corn grain	_____	171.0	109.0	99.3	90.0
9. Soybeans	_____	138.8	108.6	94.0	79.8
10. Sweet corn	_____	11.6	.9	3.2	5.2
11. Corn silage	_____	.4		.7	1.4
12. Other cultivated crops	_____	1.5			
13. Total cultivated crops	_____	323.3	218.5	197.2	176.4
14. Total till. land in hay	_____	5.9	6.2	6.3	6.4
15. Total till. land in pasture	_____	.4	.4	.5	.6
16. Feed grain program	_____	83.0	47.4	47.3	47.3
17. Till. land not cropped	_____	.6		.4	.9
18. Total tillable land	_____	446.8	283.8	269.5	255.7
19. Wild hay & non-till. pasture	_____	11.7	5.6	10.2	14.6
20. Timber, waste, roads & farmstead	_____	33.2	18.4	21.0	23.7
21. Total acres in farm	_____	491.7	307.8	300.7	294.0
22. Percent land tillable	_____	90.8	92.2	89.6	87.0

All size categories tend to have about the same percent of tillable land. Although the smaller size farms give approximately equal acreage for raising corn and soybeans, the two larger groups raised about 25 percent more corn than soybeans.

Medium sized farms reported higher yields for corn and soybeans than

Table 10. Distribution of Acres in Farm for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
1.	2.2	2.9	3.5	13.2	9.4	5.7
2.	.7	3.1	5.2	11.8	10.9	10.0
3.	8.9	9.9	11.0	26.5	31.7	37.5
4.	.5	.2		3.6	4.3	4.9
5.		1.1	2.1	4.9	9.0	13.0
6.		.1	.1	.7	.4	
7.	12.3	17.3	21.9	60.7	65.7	71.1
8.	190.8	172.3	154.9	247.3	241.6	236.2
9.	129.8	133.9	137.7	209.8	188.6	167.2
10.	6.4	5.9	5.3	37.1	25.7	14.1
11.		.2	.4	.1	.2	.2
12.				1.2	4.4	7.7
13.	327.0	312.3	298.3	495.5	460.5	425.4
14.	2.7	4.3	5.8	8.2	7.2	6.3
15.		.2	.4	.3	.5	.8
16.	61.6	68.8	75.7	143.8	132.8	121.7
17.	1.0	.6	.2	1.0	.7	.3
18.	404.6	403.5	402.3	709.5	667.4	625.6
19.	6.3	7.8	9.1	17.5	17.2	16.6
20.	27.7	28.0	28.4	54.0	50.7	47.8
21.	438.6	439.3	439.8	781.0	735.3	690.0
22.	92.2	91.8	91.5	90.8	90.8	90.7

Table 11. Crop Yields per Acre for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970

Item	Your farm	All cash crop farms	Less than 380 acres		
			1/2 high in labor earnings	Average	1/2 low in labor earnings
1. Wheat, bushels	_____	37.6	*	37.8	*
2. Oats for grain, bushels	_____	63.7	*	64.2	*
3. Corn for grain, bushels	_____	107.8	112.8	105.7	98.3
4. Soybeans, bushels	_____	31.0	35.2	31.0	26.4
5. Alfalfa hay, tons	_____	3.2	*	3.3	*
6. Feed grain program, dollars	_____	60	63	59	57

* Less than 5 cases per year.

was reported for either of the other size groups included in this study. Their average yield was 111 bushels for corn and 31.3 bushels for soybeans. There was a significant difference in corn and soybean yields within this group, as the top one-half in earnings outyielded the lower group by 11.4 bushels for corn and 3.9 bushels for soybeans. Although both small and large farms had slightly lower average crop yields, the yield difference within each group remained similar to that of the medium sized farms.

Within each size group, there is a difference between high and low earnings groups with respect to the feed grain program. In each case, the top one-half in labor earnings received higher acre payments. The difference is $6 per acre for the small farms, $5 for medium sized farms, and $4 for large farms. This difference presents the possibility that the variation in crop yields could also be attributed to fertility and topography in addition to managerial ability.

Table 11. Crop Yields per Acre for Specialized Cash Crop Farms, Southern Minnesota, 1968-1970 (continued)

	380-499 acres			500 acres and over		
	1/2 high in labor earnings	Average	1/2 low in labor earnings	1/2 high in labor earnings	Average	1/2 low in labor earnings
1.				*	37.4	*
2.	*	62.8	*	67.4	64.2	*
3.	116.9	111.0	105.5	113.2	106.7	100.6
4.	33.4	31.3	29.5	32.6	30.6	28.5
5.	*	3.3	*	3.1	3.1	3.1
6.	65	62	60	60	58	56

CONCLUSION

Variation in earnings within various size of farm categories is greater than between size categories. More of the variation occurs in receipts than in expense. The following are some additional characteristics of the most profitable farms as compared to the least profitable farms.

1. More capital managed per farm.
2. Little difference in number of workers per farm.
3. Little difference in total and in per acre purchases of fertilizers.
4. Less total purchases per $100 of sales.
5. More work units per worker (work accomplished per worker).
6. More farm sales per worker.
7. Little difference in percent of land that is tillable.
8. Higher per acre yields of corn grain and soybeans.
9. Higher per acre payment for land in feed grain program.
10. More tillable acres per worker.
11. More capital managed per worker.

Efficiency in acquiring, combining and using sets of productive resources is the mark of a good manager. Management of labor as well as management of capital is important. Even though a farmer and his family furnish most of the labor, it is important to manage it in such a way so as to perform all the farm tasks at the most opportune time.

In determining farm size, individual preferences may be equally as important as economic considerations. The farmer who does an outstanding job with a medium sized crop farm may be perfectly rational in deciding not to expand. The additional income from expansion may not be sufficient to cover additional labor, risk, and managerial stress "costs" involved. Some personal factors can take precedence over the maximizing of income.

Crop farmers considering expansion should have accomplishments comparing favorably with farmers in the top one-half in earnings. The below average and average producers will receive more compensation from improved efficiency than increased size.