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**1968 - 1969**

**SPECIALIZED DAIRY FARMS  
IN SOUTHERN MINNESOTA**

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1968-1969

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## INTRODUCTION

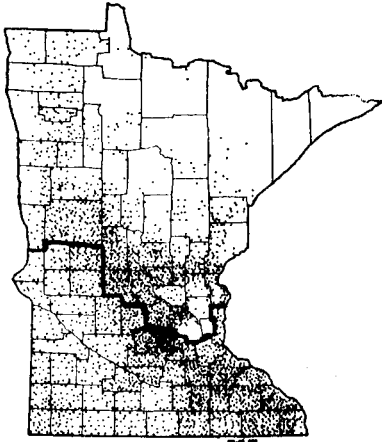
Dairying remains an important farm enterprise in Minnesota with sales of milk and cull dairy animals accounting for more than 25 percent of cash farm receipts.<sup>1</sup> However, recent increases in the average herd size suggest a need to examine the effects of herd size on earnings. To make an intelligent decision on what course of action an individual dairyman should take--increase size, keep herd size constant or quit dairying completely--one needs to first determine the competitive position of the operation relative to other dairy farms in a given size category. The dairyman is then ready to study the requirements and rewards associated with growth or consider getting out of dairying.

The purpose of this report is to provide dairy farm operators, educators, and credit agency personnel with "benchmark" information for making such an appraisal. The report summarizes business records of 176 specialized dairy farms in southern Minnesota for 1968 and 147 for 1969. Vocational-technical schools at Willmar, Mankato, Winona and Austin, and the Southeastern and Southwestern Minnesota Farm Management Associations provided the individual farm record summaries.

Figure 1 shows the distribution of dairy cows and heifers in Minnesota, with the heavy line indicating the northern boundary of the study area. The sample farm locations are representative of the southern half and the western edge of the Minnesota "dairy belt."

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1. Minnesota Agricultural Statistics, 1970, State-Federal Crop and Livestock Reporting Service, Minnesota Department of Agriculture, March 1970, p. 70.



One dot = 500 cows and heifers.  
The heavy line indicates the  
northern boundary of the study  
area.

Figure 1. Distribution of dairy cows and heifers on farms, January 1, 1970<sup>2</sup> and location of study area.

For this study, a dairy farm is considered "specialized" when 80 percent or more of the cash income comes from the dairy enterprise. Cash income includes the sale of cows and young stock as well as the sale of milk.

The effects of herd size is a major focus of the study. Table 1 indicates the number of specialized farms in each of the five size categories studied. Often large differences in profitability are noted within size

Table 1. Number of Farms Reported in Size Categories

Herd size	1968	1969
Less than 25 cows	25	15
25-34	48	53
35-44	52	31
45-64	43	38
65 cows and over	<u>8</u>	<u>10</u>
All specialized dairy farms	176	147

groups. Therefore, for each of the three intermediate size categories, the tables also report data for the highest 20 percent and lowest 20 percent of the farms in labor earnings.

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2. Ibid., p. 46.

Simple arithmetic averaging is used throughout the report. Calculations were made for each year and the 1968 and 1969 results were averaged. The authors of this report suggest dairy farmers copy facts concerning their business into the appropriate blank columns so comparisons can be made with the most appropriate averages. Comparisons with averages will not tell a farmer what to do but they will yield ideas that he can weigh to see if they might be appropriate for his business.

The report is divided into five sections: The first section looks at total investment. The second section studies earnings on both a cash and enterprise basis. A detailed appraisal of the dairy and crop enterprises is made in the third and fourth sections. The final section serves as an overview of some of the more important characteristics noted in this study.

#### I. CAPITAL MANAGED

The average value of landlord and operator capital managed for the various sizes of dairy farms is reported in table 2. Larger herd size was associated with larger total investment per farm. Investments ranged from \$38,359 for herds averaging twenty cows to \$150,415 for herds with eighty-two cows. All size groups reported an average increase in capital of four to seven percent annually in 1968 and 1969.

Table 3 reports investment data on a per cow basis. There was little difference in the total capital managed per cow among the three intermediate-size categories studied, with investment per cow ranging from \$2051 to \$2098. The smallest and largest herd size categories tended to have somewhat lower than average investment per cow. The less than 25 cow group averaged \$1918 per cow, while the 65 and over group had an investment of \$1830 per cow. Lower investment on the smaller herds appears to be related to a very low investment in livestock equipment and facilities, likely reflecting the fact

Table 2. Capital Managed on Specialized Dairy Farms, Southern Minnesota, 1968-69

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Low 1/5 labor earnings	
1. Acres per farm	_____	263	164	220	228	251
2. Cows per farm	_____	40	20	32	30	30
3. Number of workers	_____	1.6	1.2	1.4	1.4	1.5
Average capital managed as of January 1						
4. Dairy cows	\$ _____	\$ 9458	\$ 4220	\$ 8066	\$ 7237	\$ 6784
5. Other dairy cattle	_____	5102	2325	4062	3964	3654
6. Other livestock	_____	657	291	125	299	289
7. Crops and feed	_____	7475	3994	5242	5622	6143
8. Auto & truck (fm.sh.)	_____	1212	673	1072	1107	869
9. Tractors & crop mach.	_____	8226	4148	5486	6397	7880
10. Livestock equipment	_____	3175	991	2525	2033	1868
11. Farm buildings	_____	19195	7751	11094	13009	18015
12. Land	_____	25372	13128	20148	20501	22631
13. Total capital managed \$	_____	\$79872	\$37521	\$57820	\$60169	\$68133
Average capital managed as of December 31						
14. Total capital managed \$	_____	\$84466	\$39196	\$64731	\$64161	\$71082
15. Ave. total capital mgd. \$	_____	\$82169	\$38359	\$61276	\$62165	\$69608
16. Ave. total capital mgd. per worker	\$ _____	\$51355	\$31966	\$43769	\$44404	\$46405

that these were older, more fully depreciated facilities. In contrast, the 65 cows and over group had slightly above average investments in both livestock equipment and facilities but below average investments in all other inventory items. Markedly lower investments in land and crop machinery per cow were major contributors to this lower investment structure.

Comparisons of earning groups within the three intermediate sized herd groupings show that the lower earnings groups tended to have higher total investments per farm, per worker, and per cow. The detailed listing of the investments on a per cow basis shows that the low earnings group had much higher investments

Table 2. Capital Managed on Specialized Dairy Farms, Southern Minnesota, 1968-1969 (continued)

	35-44 cows		45-64 cows		65 cows and over		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings		Average	
1.	288	256	272	306	316	312	436
2.	39	39	39	53	53	52	82
3.	1.4	1.6	1.6	1.8	1.8	1.8	2.2
Average capital managed as of January 1							
4.	\$ 9484	\$ 9520	\$ 8845	\$12490	\$12486	\$12456	\$17665
5.	4676	5424	5194	6478	6510	6523	9494
6.	574	900	708	714	1025	1615	289
7.	8423	7779	6915	10036	9582	10947	14122
8.	1206	1232	1411	1146	1402	1660	1624
9.	10450	8239	8100	10054	10684	11480	14261
10.	3713	3274	3466	4000	4967	5560	6916
11.	17294	18816	20083	27627	28378	32524	40530
12.	26247	25264	32207	28211	33220	37283	40955
13.	\$82067	\$80448	\$86929	\$100756	\$108254	\$120048	\$145856
Average capital managed as of December 31							
14.	\$90443	\$84473	\$91571	\$110808	\$114022	\$119490	\$154972
15.	\$86255	\$82460	\$89250	\$105782	\$111138	\$119769	\$150415
16.	\$61611	\$51538	\$55781	\$58768	\$61743	\$66538	\$68370

in buildings and land, with a like tendency to carry larger feed inventories and have a higher investment in crop machinery, when compared with the high earnings group.

These investment data may deviate somewhat from current market values. For example, raised dairy cows are inventoried at market value when they enter the milking herd, so the resulting averages lag during periods of increasing cow prices. Also, land is valued at cost and has not been corrected for price inflation which occurred after the farms were purchased. Most of the other farm assets reflect current market prices.



Table 3. Capital Managed Per Cow on Specialized Dairy Farms as of January 1, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Low 1/5 labor earnings	
1. Dairy cows	\$ _____	\$ 235	\$ 211	\$ 255	\$ 239	\$ 230
2. Other dairy cattle	_____	127	116	129	131	124
3. Other livestock	_____	16	15	4	10	10
4. Crops and feed	_____	186	200	166	186	208
5. Auto and truck	_____	30	34	34	37	29
6. Tractors & crop mach.	_____	205	207	174	211	267
7. Livestock equipment	_____	79	50	80	67	63
8. Farm buildings	_____	477	388	351	429	611
9. Land	_____	631	656	638	677	767
10. Total capital per cow January 1	\$ _____	\$1986	\$1877	\$1831	\$1987	\$2309
11. Average total capital per cow	\$ _____	\$2044	\$1918	\$1939	\$2051	\$2360

Table 3. Capital Managed Per Cow on Specialized Dairy Farms as of January 1, Southern Minnesota, 1968-1969 (continued)

	35-44 cows			45-64 cows			65 cows and over
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average	Low 1/5 labor earnings	
1.	\$ 243	\$ 242	\$ 229	\$ 237	\$ 234	\$ 241	\$ 215
2.	120	138	134	123	122	126	115
3.	15	23	18	14	19	31	4
4.	215	198	179	191	179	212	172
5.	31	31	36	22	26	32	20
6.	267	210	209	191	200	222	173
7.	95	83	90	76	93	108	84
8.	442	479	519	525	531	629	493
9.	671	643	832	536	622	721	498
10.	\$2099	\$2047	\$2246	\$1915	\$2026	\$2322	\$1774
11.	\$2206	\$2098	\$2306	\$2011	\$2081	\$2316	\$1830

## II. EARNINGS STATEMENTS

A. Cash Statement

Cash receipts and expenses are itemized in table 4. Any landlord's share is included to make records comparable on a whole farm basis. "Labor earnings" is the amount that would be left as salary to the operator if he paid hired man wages for unpaid family labor and a charge of approximately 5.75 percent interest on average capital.<sup>3</sup> Labor earnings increase with herd size. Herds averaging twenty cows yielded \$4120 labor earnings, while herds of thirty cows averaged \$6502, herds of forty cows averaged \$8134, and herds of fifty-three cows averaged \$9656. Labor earnings for the largest herds (average size of eighty-two cows) were \$16392.

Large variation in labor earnings is evidenced within the intermediate size categories. In each size group, the highest 20 percent in labor earnings averaged well over \$10,000 above the lowest 20 percent. The actual differences in herd size and total expenses are small when compared to the large increase in receipts reported by the better managers. Other tables of this report will help identify reasons why the better managers earned more with about the same amounts of resources.

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3. Items 10 and 33, increases and decreases in farm capital, are included in labor earnings calculations. Since purchases of capital items, such as machinery, equipment and buildings, are used for more than one year, only the annual depreciation enters into the calculation of labor earnings by showing increases in capital as a receipt and decreases as an expense. Increases or decreases are the difference in the average farm capital between January 1 and December 31, as shown in table 2. This summarizes in one figure the net effect of the following changes:

- (1) Products bought but not fully used up during the year, such as depreciable assets and also supplies bought for use next year.
- (2) Depreciation on capital assets.
- (3) Products produced but not sold during the year, so they are on the end of the year inventory.
- (4) Products that were produced during the previous year or years (on hand at the beginning of the year) and sold this year.
- (5) Products sold that were previously purchased for later resale, such as feeder cattle and feeder pigs.
- (6) Casualty losses.

Net cash income, another measure of financial success in farming, is also shown in table 4 and is the difference between total sales and total purchases, including capital items. Net cash income can fluctuate widely from farm to farm since it includes capital purchases. It is apt to be low during years when a major expenditure is made for new buildings or for a large farm machine.

Table 5 places the cash statement on a per cow basis, permitting more direct comparisons among size and earnings categories. Total farm receipts per cow increased from \$823 for the smallest herds to \$878 for the 35-44 cow group and then decreased to \$827 for the largest herds. Lower milk sales and smaller inventory increases, only slightly offset by above average income from other sources, accounted for the lower total receipts of the small herds. On the other hand, markedly lower sales of dairy cattle and other livestock led to lower total receipts from the largest herds. This may reflect herd size growth through internal expansion and a tendency to specialize entirely in milk production.

The labor earnings per cow resulting from this pattern of receipts and expenses would suggest that labor earnings per cow can be kept at fairly high levels with increased herd size. However, since the larger herds tend to limit other income producing activities and have lower than average dairy cattle sales, certain cost efficiencies must be attained to maintain earnings at a satisfactory level. An efficient cropping enterprise appears to be one important way that the largest herds achieved these efficiencies. The average manager in the 45-64 cow group failed to control expenses in the face of lower receipts, thereby obtaining less than average labor earnings per cow.

Similar analysis can be made for differences in earnings within herd size categories. Increased milk production and increases in capital account for the major portion of the difference in labor earnings. In each instance, this

Table 4. Cash Statement for Specialized Dairy Farms, Southern Minnesota, 1968-69

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
<b>RECEIPTS</b>						
1. Milk sales	\$ _____	\$21087	\$ 9318	\$18244	\$15121	\$12993
2. Dairy cattle sold	_____	4490	2417	4149	3578	3302
3. Other livestock sold	_____	1200	712	295	810	725
4. Corn sold	_____	444	106	750	462	180
5. Other crops sold	_____	1449	940	810	1088	1173
6. Other cap. assets sold	_____	298	123	250	251	194
7. Work off the farm	_____	338	300	249	245	230
8. Misc. farm income	_____	601	526	360	377	305
9. Total farm sales	\$ _____	\$29907	\$14442	\$25107	\$21932	\$19102
10. Incr. in farm cap.	_____	4594	1675	6911	3992	2949
11. Fam. living from farm	_____	439	346	376	369	367
12. Total farm receipts	\$ _____	\$34940	\$16463	\$32394	\$26293	\$22418
<b>EXPENSES</b>						
13. Dairy cattle bought	\$ _____	\$ 1043	\$ 660	\$ 650	\$ 636	\$ 870
14. Other lvstk. bought	_____	136	50	123	144	171
15. Miscel. lvstk. exp.	_____	1238	475	966	822	784
16. Feed bought	_____	2946	1432	2240	1934	2022
17. Fertilizer & lime	_____	1146	537	815	844	918
18. Other crop expenses	_____	1067	516	875	812	806
19. Custom work hired	_____	1391	637	1152	1106	946
20. Gas, oil, grease	_____	1040	659	768	864	894
21. Repairs--auto, truck tractors, crop mach.	_____	1276	799	1116	1045	1030
22. Repairs--real estate	_____	405	174	366	286	209
23. Repairs--lvstk. equip.	_____	286	125	160	184	198
24. Wages of hired labor	_____	862	230	398	403	638
25. Electricity	_____	441	258	340	331	306
26. Taxes	_____	891	479	620	677	846
27. Gen. farm expense	_____	506	309	414	404	392
28. Total cash opr. exp.	\$ _____	\$14674	\$ 7340	\$11003	\$10492	\$11030
29. Power & mach. bought	_____	3460	1574	3038	2812	2885
30. Lvstk. equip. bought	_____	955	383	853	686	621
31. Bldgs, & RE improve.	_____	2162	419	2012	1579	2004
32. Total farm purchases	\$ _____	\$21251	\$ 9716	\$16906	\$15569	\$16540
33. Decr. in farm capital	_____					
34. Interest @ 5.5%	_____	4536	2118	3418	3436	3851
35. Unpaid family labor	_____	1038	479	608	742	822
36. Board for hired labor	_____	80	30	20	44	118
37. Total expenses	\$ _____	\$26905	\$12343	\$20952	\$19791	\$21331
38. Labor earnings (line 12 - line 37)	\$ _____	\$ 8035	\$ 4120	\$11442	\$ 6502	\$ 1087
39. Net cash income (line 9 - line 32)	\$ _____	\$ 8056	\$ 4726	\$ 8201	\$ 6363	\$ 2562

Table 4. Cash Statement for Specialized Dairy Farms, Southern Minnesota, 1968-69  
(continued)

	35-44 cows		45-64 cows		65		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average	Low 1/5 labor earnings	cows and over
RECEIPTS							
1.	\$22395	\$20975	\$18451	\$29615	\$28727	\$25837	\$44280
2.	4569	4380	4282	6048	5969	6384	7796
3.	987	1494	1545	1390	1692	2943	476
4.	149	511	538	512	476	1089	486
5.	2474	1464	1957	1830	1722	1422	3074
6.	314	241	240	667	448	224	509
7.	760	364	238	460	402	472	453
8.	824	571	225	802	819	882	1150
9.	<u>\$32472</u>	<u>\$30000</u>	<u>\$27476</u>	<u>\$41324</u>	<u>\$40255</u>	<u>\$39253</u>	<u>\$58224</u>
10.	8376	4025	4642	10052	5768		9116
11.	546	492	474	488	484	515	659
12.	<u>\$41394</u>	<u>\$34517</u>	<u>\$32592</u>	<u>\$51864</u>	<u>\$46507</u>	<u>\$39768</u>	<u>\$67999</u>
EXPENSES							
13.	\$ 1162	\$ 680	\$ 1985	\$ 1104	\$ 1591	\$ 2056	\$ 2940
14.	67	92	172	208	183	314	22
15.	1170	1347	1524	1872	1798	1570	2128
16.	1986	2922	3510	3558	4174	4392	5979
17.	1124	1102	1296	1510	1620	1668	2424
18.	1030	1064	1244	1422	1476	1407	1737
19.	1319	1477	1406	1693	1836	1609	2132
20.	904	1019	1180	1346	1340	1493	1544
21.	1126	1202	1442	1710	1701	1704	1972
22.	402	468	488	482	550	534	737
23.	224	298	322	358	418	263	495
24.	947	970	1222	1414	1262	764	2400
25.	441	438	390	636	605	564	712
26.	1000	882	936	1130	1114	1156	1898
27.	472	533	549	566	650	716	779
28.	<u>\$13374</u>	<u>\$14494</u>	<u>\$17666</u>	<u>\$19009</u>	<u>\$20318</u>	<u>\$20210</u>	<u>\$27899</u>
29.	4968	3223	2880	5588	4654	3771	6486
30.	1053	989	1056	1464	1279	1283	1662
31.	2978	2132	2244	3976	2788	1728	4856
32.	<u>\$22373</u>	<u>\$20838</u>	<u>\$23846</u>	<u>\$30037</u>	<u>\$29039</u>	<u>\$26992</u>	<u>\$40903</u>
33.						558	
34.	4728	4532	4897	5975	6166	6674	8524
35.	344	934	683	812	1522	2522	2058
36.	51	79	58	76	124	74	122
37.	<u>\$27496</u>	<u>\$26383</u>	<u>\$29484</u>	<u>\$36800</u>	<u>\$36851</u>	<u>\$36820</u>	<u>\$51607</u>
38.	\$13898	\$ 8134	\$ 3108	\$15064	\$ 9656	\$ 2948	\$16392
39.	\$10099	\$ 9162	\$ 3630	\$11287	\$11216	\$12261	\$17321

Table 5. Cash Statement on a Per Cow Basis for Specialized Dairy Farms, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Low 1/5 labor earnings	
				Average		
<b>RECEIPTS</b>						
1. Milk sales	\$ _____	\$ 525	\$ 466	\$ 577	\$ 499	\$ 440
2. Dairy cattle sold	_____	112	121	131	118	112
3. Other livestock sold	_____	30	36	9	27	25
4. Crops sold	_____	47	52	50	51	46
5. Other cap. assets sold	_____	7	6	8	8	7
6. Work off the farm	_____	8	15	8	8	8
7. Misc. farm income	_____	15	26	11	13	10
8. Total farm sales	\$ _____	\$ 744	\$ 722	\$ 794	\$ 724	\$ 648
9. Incr. in farm capital	_____	114	84	219	132	100
10. Fam. living from farm	_____	11	17	12	12	12
11. Total farm receipts	\$ _____	\$ 869	\$ 823	\$1025	\$ 868	\$ 760
<b>EXPENSES</b>						
12. Dairy cattle bought	\$ _____	\$ 26	\$ 33	\$ 21	\$ 21	\$ 29
13. Other livestock bought	_____	3	2	4	5	6
14. Misc. lvstk. expense	_____	31	24	31	27	27
15. Feed bought	_____	73	72	70	64	69
16. Fertilizer & lime	_____	28	27	26	29	31
17. Other crop expenses	_____	27	26	28	27	27
18. Custom work	_____	35	32	36	36	32
19. Gas, oil, grease	_____	26	32	24	29	30
20. Repairs--auto, truck, tractors, cr. mach.	_____	32	40	34	34	35
21. Repairs--real estate	_____	10	9	12	9	7
22. Repairs--lvst. equip.	_____	7	6	5	6	7
23. Wages of hired labor	_____	21	12	13	13	22
24. Electricity	_____	11	13	11	11	10
25. Taxes	_____	22	24	20	22	29
26. General farm expense	_____	13	15	13	13	13
27. Total cash opr. exp.	\$ _____	\$ 365	\$ 367	\$ 348	\$ 346	\$ 374
28. Power & mach. bought	_____	86	79	96	93	98
29. Lvstk. equip. bought	_____	24	19	27	23	21
30. Bldg. & RE improve.	_____	54	21	64	52	68
31. Total farm purchases	\$ _____	\$ 529	\$ 486	\$ 535	\$ 514	\$ 561
32. Decr. in farm capital	_____					
33. Interest @ 5.5%	_____	113	106	108	113	130
34. Unpaid family labor	_____	25	23	19	25	28
35. Board for hired labor	_____	2	2	1	1	4
36. Total expenses	\$ _____	\$ 669	\$ 617	\$ 663	\$ 653	\$ 723
37. Labor earnings	\$ _____	\$ 200	\$ 206	\$ 362	\$ 215	\$ 37

Table 5. Cash Statement on a Per Cow Basis for Specialized Dairy Farms, Southern Minnesota, 1968-1969 (continued)

	33-44 cows			45-64 cows		65 cows and over	
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average		Low 1/5 labor earnings
RECEIPTS							
1.	\$ 573	\$ 534	\$ 477	\$ 563	\$ 538	\$ 500	\$ 539
2.	117	111	111	115	112	123	95
3.	25	38	40	26	32	57	6
4.	67	50	64	45	41	49	43
5.	8	6	6	13	8	4	6
6.	19	9	6	9	8	9	6
7.	21	15	6	15	15	17	13
8.	\$ 830	\$ 763	\$ 710	\$ 786	\$ 754	\$ 759	\$ 708
9.	214	102	120	191	108		111
10.	14	13	12	9	9	10	8
11.	\$1058	\$ 878	\$ 842	\$ 986	\$ 871	\$ 769	\$ 827
EXPENSES							
12.	\$ 30	\$ 17	\$ 51	\$ 21	\$ 30	\$ 40	\$ 36
13.	2	2	4	4	3	7	1
14.	30	34	39	36	34	30	26
15.	51	74	91	68	78	85	73
16.	29	28	33	29	30	32	29
17.	26	27	32	27	28	27	21
18.	34	38	36	32	34	31	26
19.	23	26	30	26	25	29	19
20.	28	30	37	32	32	34	24
21.	10	12	13	9	10	10	9
22.	6	8	8	7	8	5	6
23.	24	25	32	27	24	15	29
24.	11	11	10	12	11	11	9
25.	26	22	24	21	21	22	23
26.	12	14	14	11	12	14	9
27.	\$ 342	\$ 368	\$ 456	\$ 362	\$ 380	\$ 391	\$ 340
28.	127	82	75	106	88	73	79
29.	27	25	27	28	24	25	20
30.	76	54	58	76	52	33	59
31.	\$572	\$ 530	\$ 616	\$ 572	\$ 544	\$ 522	\$ 498
32.						11	
33.	121	115	127	112	115	129	104
34.	9	24	18	15	29	49	26
35.	1	2	1	1	2	1	1
36.	\$ 703	\$ 671	\$ 762	\$ 700	\$ 690	\$ 712	\$ 629
37.	\$ 355	\$ 207	\$ 80	\$ 286	\$ 181	\$ 57	\$ 199



this difference is substantial--from approximately \$200 to \$300 per cow--leading to a question of the economic viability of these low earnings units over time.

B. Return on Investment, Selected Expense Ratios, and Labor Efficiency

Return on Investment. Dairy farm managers desire a reasonable return on investment in addition to a competitive wage for labor and management. Table 6 outlines the procedure used in calculating the return to farm capital. Average farms returned 8 percent, while small farms and poorly managed operations showed much lower returns. Better managers and managers of the largest herds earned 12 to 14 percent return to capital.

This arbitrary calculation tends to overstate returns on large operations. A constant \$6000 charge for operator labor and management is probably unrealistic when the better managers could command higher wages in alternative business opportunities.

Two factors related to return on investment were calculated: (1) asset turnover--the value produced per dollar of assets managed and (2) net profit margin--the profit generated per dollar of product produced. The difference in asset turnover among herd size groups was small, ranging from .42 to .47. Net profit margins, however, increased as herd size increased, thus explaining the higher investment return. Within herd size categories, high earnings farmers achieved a higher asset turnover as well as a larger net profit margin.

Expense ratios. Table 6 also shows the calculation of two expense ratios. Cash operating expenses per \$100 farm sales--a good measure of overall cost control--was quite uniform over all size groups, averaging \$49 per \$100 sales. Within size groups, the high 1/5 earnings farms exhibited much better cost control than the low 1/5 earnings farms in the two smaller herd sizes.

The second expense ratio is total farm purchases per \$100 farm sales.

Total purchases include capital expenditures, so the ratio may fluctuate widely for individual farms from year to year. The high earnings farms could be expected to show a smaller total purchase per \$100 farm sales from the simple fact that total farm sales are larger and there is a relatively small difference in expenses. This holds for the 30-cow and 40-cow herd sizes but is reversed in the 45-64 cow herd size category. In these larger herds, there was little difference in the cash expense ratios; however, the better managers were investing much more. This suggests that care must be taken in interpreting this ratio in the absence of inventory changes and the respective growth patterns of the firms involved.

Labor efficiency. In addition to efficient use of capital and careful cost control, labor efficiency helps explain some of the variation in returns to labor and capital. As farm size increased, the number of workers per farm increased, as shown in table 7. This increase was proportionately less than increases in cows handled and milk produced. In fact, each worker on the largest farms handled twice as many cows and produced nearly two and one-half times as much milk as a worker on the smallest farms. This was reflected in doubled total farm receipts per worker as well. The larger operations teamed workers with more capital to accomplish these levels of efficiency. Owners of herds averaging twenty cows invested nearly \$32,000 per worker as compared to \$68,000 invested per worker on farms with an average of eighty-two cows. It is possible that it is easier for the owner of larger herds to acquire more equipment and machinery than it is to secure more labor.

#### C. Enterprise Statement

The data in table 8 show earnings on an enterprise basis. Instead of stressing purchases and sales, the enterprise statement stresses net value

Table 6. Return on Investment and Expense Ratios for Specialized Dairy Farms, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
RETURN ON INVESTMENT						
1. Labor earnings	\$ _____	\$ 8035	\$ 4120	\$11442	\$ 6502	\$ 1087
2. Interest on invest.	_____	4536	2118	3418	3436	3851
3. Total (1 + 2)	\$ _____	\$12571	\$ 6238	\$14860	\$ 9938	\$ 4938
4. Value of op's labor	_____	6000	6000	6000	6000	6000
5. Return to farm capital (3 - 4)	\$ _____	\$ 6571	\$ 238	\$ 8860	\$ 3938	\$-1062
6. Average capital managed	\$ _____	\$82169	\$38359	\$61276	\$62165	\$69608
7. Ret.per dollar cap. managed (5 + 6)	_____	8.0%	0.6%	14.5%	6.3%	-1.5%
8. Total farm receipts	\$ _____	\$34940	\$16463	\$32394	\$26293	\$22418
9. Asset turnover (8÷6)	_____	.43	.43	.53	.47	.32
10. Net profit margin (5÷8)	_____	.19	.01	.25	.15	-.05
EXPENSE RATIOS						
11. Total farm sales	\$ _____	\$29907	\$14442	\$25107	\$21932	\$19102
12. Total cash expenses	_____	14674	7340	11003	10492	11030
13. Capital improvements	_____	6577	2376	5903	4627	5510
14. Total farm purchases	_____	21251	9716	16906	15569	16540
15. Cash expenses per \$100 sales (12÷11)	_____	49	51	44	48	58
16. Farm purchases per \$100 sales (14÷11)	_____	71	67	67	71	87

Table 7. Labor Efficiency on Specialized Dairy Farms, Southern Minnesota, 1968-69

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
Number of workers	_____	1.6	1.2	1.4	1.4	1.5
Cows per worker	_____	25.1	16.7	22.6	21.6	19.7
Pounds of milk per worker	_____	283279	178974	284353	241618	195700
Total farm receipts per worker	\$ _____	\$21838	\$13719	\$23139	\$18781	\$14945
Capital managed per worker	\$ _____	\$51355	\$31966	\$43769	\$44404	\$46405

Table 6. Return on Investment and Expense Ratios for Specialized Dairy Farms, Southern Minnesota 1968-1969 (continued)

	35-44 cows			45-64 cows			65 cows and over
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average	Low 1/5 labor earnings	
RETURN ON INVESTMENT							
1.	\$13898	\$ 8134	\$ 3108	\$15064	\$ 9656	\$ 2948	\$16392
2.	4728	4532	4897	5875	6166	6674	8524
3.	\$18626	\$12666	\$ 8005	\$20939	\$15822	\$ 9622	\$24916
4.	6000	6000	6000	6000	6000	6000	6000
5.	\$12626	\$ 6666	\$ 2005	\$14939	\$ 9822	\$ 3622	\$18916
6.	\$86255	\$82460	\$89250	\$105782	\$111138	\$119769	\$150415
7.	14.6%	8.1%	2.2%	14.1%	8.8%	3.0%	12.6%
8.	\$41394	\$34517	\$32592	\$51864	\$46507	\$39768	\$67999
9.	.48	.42	.37	.49	.42	.33	.45
10.	.31	.19	.06	.29	.21	.09	.28
EXPENSE RATIOS							
11.	\$32472	\$30000	\$27476	\$41324	\$40255	\$39253	\$58224
12.	13374	14494	17666	19009	20318	20210	27899
13.	8999	6344	6180	11028	8721	6782	13004
14.	22373	20838	23846	30037	29039	26992	40903
15.							
15.	41	48	64	46	50	51	48
16.	69	69	87	73	72	69	70

Table 7. Labor Efficiency on Specialized Dairy Farms, Southern Minnesota, 1968-69 (continued)

	35-44 cows			45-64 cows			65 cows and over
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average	Low 1/5 labor earnings	
1.	1.4	1.6	1.6	1.8	1.8	1.8	2.2
2.	27.9	24.6	24.2	29.2	29.7	28.7	37.4
3.	350535	283638	246356	351597	337986	308726	430698
4.	\$29567	\$21573	\$20370	\$28813	\$25837	\$22093	\$30909
5.	\$61611	\$51531	\$55781	\$58768	\$61743	\$66538	\$68370

Table 8. Earnings on Specialized Dairy Farms, Enterprise Statement, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Low 1/5 labor earnings	
INCOME						
1. Dairy cattle	\$ _____	\$26662	\$12374	\$34674	\$19545	\$16555
2. Other livestock	_____	869	557	263	625	545
3. Total livestock	\$ _____	\$27531	\$12931	\$23937	\$20170	\$17100
4. Feed fed	_____	12924	6059	9934	9350	8971
5. Return over feed	\$ _____	\$14607	\$ 6872	\$14003	\$10820	\$ 8129
6. Crops and feed	_____	10272	4980	9788	8012	6345
7. Income from labor off farm	_____	157	198	152	105	70
8. Misc. farm income	_____	602	540	360	377	305
9. Total income	\$ _____	\$25638	\$12590	\$24303	\$19314	\$14849
EXPENSES						
10. Truck and auto	\$ _____	\$ 1232	\$ 823	\$ 1030	\$ 1072	\$ 1062
11. Electricity	_____	441	258	340	331	306
12. Tractors and crop machinery	_____	3716	1937	2892	2788	2691
13. Lvstk. equipment	_____	854	312	594	582	624
14. Buildings	_____	1727	782	1142	1120	1312
15. Misc. lvstk. exp.	_____	1238	475	966	822	784
16. Labor (hired, board, unpaid)	_____	2465	977	1446	1580	1893
17. Taxes	_____	891	479	620	676	846
18. General farm expense	_____	506	309	414	405	392
19. Interest on capital managed	_____	4535	2118	3418	3436	3852
20. Total expenses	\$ _____	\$17605	\$ 8470	\$12862	\$12812	\$13762
21. Labor earnings	\$ _____	\$ 8033	\$ 4120	\$11441	\$ 6502	\$ 1087
22. Percent of income from livestock	_____	57%	55%	58%	56%	55%
23. Percent of income from crops	_____	40%	40%	40%	41%	43%

Table 8. Earnings on Specialized Dairy Farms, Enterprise Statement, Southern Minnesota, 1968-1969 (continued)

	35-44 cows		45-64 cows		65 cows and over		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings		Average	Low 1/5 labor earnings
INCOME							
1.	\$28999	\$26807	\$23122	\$37906	\$35893	\$31809	\$53819
2.	<u>477</u>	<u>1063</u>	<u>1178</u>	<u>1282</u>	<u>1239</u>	<u>1765</u>	<u>261</u>
3.	\$29476	\$27870	\$24300	\$39188	\$37132	\$33574	\$54080
4.	<u>12840</u>	<u>13194</u>	<u>12340</u>	<u>16463</u>	<u>17430</u>	<u>18218</u>	<u>25797</u>
5.	\$16636	\$14676	\$11960	\$22725	\$19702	\$15356	\$28283
6.	13085	10603	9818	14153	13024	12443	19566
7.	293	159	45	183	171	222	232
8.	<u>824</u>	<u>571</u>	<u>225</u>	<u>803</u>	<u>819</u>	<u>883</u>	<u>1150</u>
9.	\$30838	\$26009	\$22048	\$37864	\$33716	\$28904	\$49231
EXPENSES							
10.	\$ 1248	\$ 1274	\$ 1299	\$ 1350	\$ 1466	\$ 1727	\$ 1470
11.	441	438	390	636	605	564	712
12.	3600	3746	4180	4883	4947	5476	6684
13.	726	891	1034	1134	1276	1254	1606
14.	1743	1723	1701	2432	2496	2914	3703
15.	1170	1347	1524	1872	1798	1570	2128
16.	1812	2509	2431	2922	3542	3905	5336
17.	1000	882	935	1130	1114	1156	1898
18.	472	533	549	566	650	716	779
19.	<u>4728</u>	<u>4532</u>	<u>4897</u>	<u>5875</u>	<u>6166</u>	<u>6674</u>	<u>8523</u>
20.	\$16940	\$17875	\$18940	\$22800	\$24060	\$25956	\$32839
21.	\$13898	\$ 8134	\$ 3108	\$15064	\$ 9656	\$ 2948	\$16392
22.	54%	56%	54%	60%	58%	53%	57%
23.	43%	41%	45%	37%	39%	43%	40%

Table 9. Earnings per Dairy Cow on Specialized Dairy Farms, (Enterprise Basis)  
Southern Minnesota, 1968-69

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
1. Number of cows	_____	40	20	32	30	30
INCOME						
2. Dairy cattle	\$ _____	\$ 663	\$ 619	\$ 749	\$ 645	\$ 562
3. Other livestock	_____	22	28	8	21	18
4. Total livestock	\$ _____	\$ 685	\$ 647	\$ 757	\$ 666	\$ 580
5. Feed fed	_____	322	303	314	309	304
6. Return over feed	\$ _____	\$ 363	\$ 344	\$ 443	\$ 357	\$ 276
7. Crops and feed	_____	256	249	310	265	215
8. Income from work off the farm	_____	4	10	5	3	2
9. Misc. farm income	_____	15	27	11	12	10
10. Total income	\$ _____	\$ 638	\$ 630	\$ 769	\$ 637	\$ 503
EXPENSES						
11. Truck & auto	\$ _____	\$ 31	\$ 41	\$ 33	\$ 35	\$ 36
12. Electricity	_____	11	13	10	11	10
13. Tractors & crop machinery	_____	92	97	92	92	91
14. Lvstk. equipment	_____	21	16	19	19	21
15. Buildings	_____	43	39	36	37	45
16. Misc. lvstk. expense	_____	31	24	30	27	27
17. Labor (wages, board, unpaid)	_____	61	49	46	52	64
18. Taxes	_____	22	24	20	22	29
19. Gen. farm expense	_____	13	15	13	13	13
20. Interest on capital managed	_____	113	106	108	114	130
21. Total expense	\$ _____	\$ 438	\$ 424	\$ 407	\$ 422	\$ 466
22. Labor earnings	\$ _____	\$ 200	\$ 206	\$ 362	\$ 215	\$ 37

Table 9. Earnings per Dairy Cow on Specialized Dairy Farms, (Enterprise Basis)  
Southern Minnesota, 1968-69 (continued)

	35-44 cows			45-64 cows			65 cows and over
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average	Low 1/5 labor earnings	
1.	39	39	39	53	53	52	82
INCOME							
2.	\$ 741	\$ 682	\$ 598	\$ 721	\$ 672	\$ 615	\$ 655
3.	<u>12</u>	<u>27</u>	<u>30</u>	<u>24</u>	<u>23</u>	<u>34</u>	<u>3</u>
4.	\$ 753	\$ 709	\$ 628	\$ 745	\$ 695	\$ 649	\$ 658
5.	<u>328</u>	<u>336</u>	<u>319</u>	<u>313</u>	<u>326</u>	<u>352</u>	<u>314</u>
6.	\$ 425	\$ 373	\$ 309	\$ 432	\$ 369	\$ 297	\$ 344
7.	335	270	254	269	244	241	238
8.	7	4	1	3	3	4	3
9.	<u>21</u>	<u>15</u>	<u>6</u>	<u>15</u>	<u>15</u>	<u>17</u>	<u>14</u>
10.	\$ 788	\$ 662	\$ 570	\$ 719	\$ 631	\$ 559	\$ 599
EXPENSES							
11.	\$ 32	\$ 32	\$ 34	\$ 26	\$ 27	\$ 33	\$ 18
12.	11	11	10	12	11	11	9
13.	92	95	108	92	93	107	81
14.	18	23	27	22	24	24	20
15.	45	44	44	46	47	57	45
16.	30	34	39	36	34	30	26
17.	46	64	63	55	66	75	65
18.	26	22	24	21	21	22	23
19.	12	14	14	11	12	14	9
20.	<u>121</u>	<u>116</u>	<u>127</u>	<u>112</u>	<u>115</u>	<u>129</u>	<u>104</u>
21.	\$ 433	\$ 455	\$ 490	\$ 433	\$ 450	\$ 502	\$ 400
22.	\$ 355	\$ 207	\$ 80	\$ 286	\$ 181	\$ 57	\$ 199



produced and net expenses.<sup>4</sup> On the enterprise basis, value of livestock and livestock products produced includes sales, value used in the home, changes in inventories, and accounts for transfers between enterprises. Purchases of livestock are subtracted so the data represents value of livestock and livestock products added by the enterprise.

In the calculation of the return from crops, credit is given to crops for feed raised on the farm and consumed by livestock. The return to crops becomes the net value of crops produced that year less the cost of seed, fertilizers, and similar expenses. The figures at the bottom of table 8 indicate that approximately 40 percent of the income from dairy farms is derived from crops.

Costs of operating each service enterprise (truck and auto, tractors and crop machinery, etc.) are calculated in a similar manner. Expenses and net decreases includes depreciation as well as repairs, gas, oil, etc. Thus, while earnings statements on an enterprise basis do not show purchases and sales, such a statement more truly reflects value produced for the productive enterprises and net expenses for each of the service enterprises.

In table 9, enterprise statement data are expressed on a per cow basis. Labor earnings average \$200 per cow on all farms. The average of each of the size categories varies around this slightly. Within the three middle size groups, the high 20 percent in labor earnings show about \$200 more in labor earnings per cow than the lowest 20 percent. In this division of income from "productive" enterprises and expense from "service" enterprises, better managers obtain much more income per cow while maintaining tight control over expenses.

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4. The enterprise statement will be most useful to farmers who have records analyzed through University or area vocational school programs. Others who wish to calculate net values produced and net expenses will find illustrations of the procedure in Nodland, T. and Persons, E., 1969 Farm Business Summary, Economic Information Report R70-6, Department of Agricultural and Applied Economics, University of Minnesota, August 1970, p. 14-15.

As a first step in budgeting, a dairy farmer can calculate "benchmark" income or expense at a given level of management by multiplying the desired number of cows by the figures reported in Table 9. If these rough budgets are encouraging, the budgeting can be refined by using other information, including actual record information from the farm when available.

### III. FEED COSTS AND RETURNS FROM DAIRY COWS

Feed costs and returns and related factors are shown for dairy cattle in table 10. Home grown feeds have been charged to livestock at current market prices, while purchased feeds have been charged at cost. The number of cows represents the average number on hand at the beginning of each month.

Average return over feed cost per cow varied from \$260 for herds with less than 25 cows to over \$310 for herds of 35-44 cows. Again, the better managers averaged from \$70 to \$110 more return over feed costs per cow than the less successful managers. This is accounted for mostly by higher milk production per cow resulting in higher milk receipts. Generally, the high earnings farmers had higher total feed costs and fed considerably more concentrates than the managers with low earnings.

Herds with less than 25 cows received \$4.41 per hundred pounds of milk, while the largest herds received \$4.75 per hundredweight. This likely indicates that the smaller herd owners sold manufacturing milk while the large operations were geared to fluid milk production. Within the various size groups, milk prices received by high and low earnings groups were substantially the same.

Feed requirements, costs and returns for the entire herd on a per cow basis are shown in table 11. In budgeting feed requirements for the dairy herd, 6000 to 7500 pounds of concentrates, 4 to 5 tons of hay, 6 to 8 tons of silage

Table 10. Costs and Returns from Dairy Cows, Southern Minnesota, 1968-69

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
1. Number of cows	_____	40	20	32	30	30
2. Pounds of milk/cow	_____	11286	10717	12582	11186	9934
3. Pounds of BF/cow	_____	414	388	452	407	371
Value of produce per cow						
4. Dairy products	\$ _____	\$524.48	\$472.13	\$580.02	\$509.16	\$451.93
5. Net increase in value per cow	_____	<u>-7.11</u>	<u>-.16</u>	<u>-6.61</u>	<u>-8.24</u>	<u>-10.50</u>
6. Total value prod.	\$ _____	\$517.37	\$471.97	\$573.41	\$500.92	\$441.43
Feed cost per cow						
7. Concentrates	\$ _____	\$115.52	\$108.63	\$127.42	\$113.92	\$105.88
8. Roughages	_____	99.26	92.24	91.68	95.10	90.40
9. Pasture	_____	<u>5.85</u>	<u>8.98</u>	<u>5.39</u>	<u>6.66</u>	<u>7.86</u>
10. Total feed cost	\$ _____	\$220.63	\$209.85	\$224.49	\$215.68	\$204.14
11. Return over feed cost per cow	\$ _____	\$296.74	\$262.12	\$348.92	\$285.24	\$237.29
12. Return for \$100 feed	\$ _____	\$ 234	\$ 225	\$ 255	\$ 232	\$ 216
13. Feed cost per cwt. of milk	\$ _____	\$ 1.95	\$ 1.96	\$ 1.78	\$ 1.93	\$ 2.05
14. Feed cost per pound of butterfat	\$ _____	\$ .53	\$ .54	\$ .50	\$ .53	\$ .55
15. Price received per cwt. of milk	\$ _____	\$ 4.65	\$ 4.41	\$ 4.61	\$ 4.55	\$ 4.55
16. Price received per pound of BF	\$ _____	\$ 1.27	\$ 1.22	\$ 1.29	\$ 1.25	\$ 1.22
Feed consumed per cow, lbs.						
17. Concentrates	_____	5079	4743	5655	5024	4635
18. Hay	_____	6186	6091	5716	6125	5842
19. Silage	_____	10324	8287	9479	9187	8873

Table 10. Costs and Returns from Dairy Cows, Southern Minnesota, 1968-1969  
(continued)

	35-44 cows			45-64 cows			65 cows and over
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings	Average	Low 1/5 labor earnings	
1.	39	39	39	53	53	52	82
2.	12564	11530	10180	12041	11380	10757	11516
3.	460	426	390	436	419	392	426
Value of produce per cow							
4.	\$585.87	\$543.29	\$490.21	\$567.66	\$543.15	\$505.67	\$547.13
5.	<u>-1.25</u>	<u>-3.60</u>	<u>-5.35</u>	<u>-6.04</u>	<u>-10.83</u>	<u>-14.02</u>	<u>-8.58</u>
6.	\$584.62	\$539.69	\$484.86	\$561.62	\$532.32	\$491.65	\$538.55
Feed cost per cow							
7.	\$130.32	\$120.89	\$104.81	\$106.82	\$114.68	\$110.81	\$122.30
8.	95.14	100.88	96.81	101.69	104.97	127.94	109.52
9.	<u>8.15</u>	<u>6.38</u>	<u>4.71</u>	<u>2.97</u>	<u>3.65</u>	<u>2.57</u>	<u>1.83</u>
10.	\$233.61	\$228.15	\$206.33	\$211.48	\$223.30	\$241.32	\$233.65
11.	\$351.01	\$311.54	\$278.53	\$350.14	\$309.02	\$250.33	\$304.90
12.	\$ 250	\$ 237	\$ 235	\$ 266	\$ 238	\$ 204	\$ 230
13.	\$1.86	\$1.98	\$2.03	\$1.76	\$1.96	\$2.24	\$2.03
14.	\$ .51	\$ .54	\$ .53	\$ .48	\$ .53	\$ .62	\$ .55
15.	\$4.88	\$4.71	\$4.82	\$4.72	\$4.77	\$4.70	\$4.75
16.	\$1.28	\$1.28	\$1.26	\$1.30	\$1.30	\$1.29	\$1.28
Feed consumed per cow, lbs.							
17.	6063	5226	4589	4721	5158	4670	5312
18.	6264	6232	5790	6220	6104	7285	7200
19.	8546	10695	9025	10830	12388	16454	10633

Table 11. Costs and Returns from Entire Herd on a Per Cow Basis, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
1. Number of cows	_____	40	20	32	30	30
2. Number of young stock per cow	_____	1.2	1.2	1.2	1.2	1.2
3. Total value produced per cow	\$ _____	\$601.04	\$617.71	\$743.53	\$646.20	\$562.10
4. Feed cost per cow	_____	<u>298.45</u>	<u>287.94</u>	<u>309.29</u>	<u>298.27</u>	<u>291.18</u>
5. Return over feed per cow	\$ _____	\$302.59	\$329.77	\$434.24	\$347.93	\$270.92
6. Return for \$100 feed	\$ _____	\$ 201	\$ 215	\$ 240	\$ 217	\$ 193
Feed per cow, lbs.						
7. Concentrates	_____	6066	6082	6991	6370	6424
8. Hay	_____	8947	8750	8770	8780	8632
9. Silage	_____	13916	12242	13770	13398	12597
10. Acres of pasture	_____	.6	.9	.4	.6	.8
11. Total acres of pasture*	_____	23.2	17.6	13.9	19.4	25.0

\* Acres of tillable pasture plus 1/2 of the acres of non-tillable pasture.

and, in some cases, limited pasture will take care of a cow and associated young stock. The actual amounts used will depend on the feed available from the particular farm, the productive capacity of the cows, and the skill of the manager in selecting the proper ration. The herds reported an average production of just over 11,000 pounds of milk per cow annually. Farmers with a higher production goal will adjust the ration accordingly.

Many dairy farm managers consider \$200 return per \$100 feed to be a "break-even" point, because feed ordinarily represents half the cost involved in producing milk. The averages for all herd sizes in 1968 and 1969 represent operations above the breakeven point, while the lowest twenty percent in labor earnings for each size category report less than \$200 return per \$100 feed.

Table 11. Costs and Returns from Entire Herd on a Per Cow Basis, Southern Minnesota, 1968-1969 (continued)

	35-44 cows		45-64 cows		65 cows and over		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings		Average	Low 1/5 labor earnings
1.	39	39	39	53	52	52	82
2.	1.2	1.3	1.4	1.2	1.2	1.1	1.0
3.	\$741.07	\$680.29	\$595.00	\$716.57	\$668.22	\$613.36	\$658.37
4.	<u>319.94</u>	<u>316.71</u>	<u>297.61</u>	<u>295.24</u>	<u>306.90</u>	<u>321.52</u>	<u>310.70</u>
5.	\$421.13	\$363.58	\$297.39	\$421.33	\$361.32	\$291.84	\$347.67
6.	\$ 231	\$ 215	\$ 199	\$ 242	\$ 218	\$ 191	\$ 212
Feed per cow, lbs.							
7.	7324	6526	6076	6144	6492	5844	6358
8.	9700	9335	8487	9002	8850	9942	10276
9.	13004	15595	15644	15005	16330	20518	24158
10.	.6	.6	.6	.5	.5	.4	.4
11.	25.3	25.3	25.1	27.4	25.3	22.0	33.7

## IV. CROPPING PROGRAM

Tables 12 and 13 show the distribution of acres per farm and the yield levels of important crops grown on the sample farms in 1968 and 1969. Approximately 40 percent of the income on all of these farms is derived from crop production, as was shown in table 4. This fact alone stresses the need for a good dairy farm manager to be able to manage crop production as well. Southern Minnesota dairy farms have about 70 percent of the acres tillable. A high proportion of the acreage is used for hay and pasture, which reflects the rolling, hilly topography of the dominant dairy areas. The larger farms generally reported higher yields. Likewise, the best managers consistently produced higher per acre yields of corn, corn silage and alfalfa. Fertilizer expenditure per tillable acre was greater on the large farms. As a result, the larger farms required fewer tillable acres per cow.

Table 12. Distribution of Acres in Farm on Specialized Dairy Farms, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
1. Oats	_____	22.0	17.7	27.8	23.8	19.8
2. Other small grains	_____	8.7	4.3	4.6	7.7	5.7
3. Corn grain	_____	46.1	22.8	52.1	40.6	36.1
4. Corn silage	_____	20.2	12.5	12.0	15.0	14.8
5. Other cultivated crops	_____	10.5	4.1	2.5	6.9	10.5
6. Tillable land in hay	_____	56.9	32.8	43.5	46.3	46.2
7. Tillable land in pasture	_____	8.3	7.0	7.6	6.2	9.5
8. Tillable land not cropped (including feed grain program)	_____	10.9	8.6	6.5	8.5	12.9
9. Total tillable land	_____	183.6	109.8	156.6	155.0	155.5
10. Total land farmed	_____	262.9	163.7	219.6	228.2	251.0

Table 13. Per Acre Yields of Main Crops on Specialized Dairy Farms, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
1. Oats, bu.	_____	59.8	57.9	66.7	58.7	52.7
2. Corn grain, bu.	_____	82.2	69.4	86.6	81.3	78.9
3. Corn silage, tons	_____	13.7	10.2	15.8	14.6	13.8
4. Alfalfa hay, tons	_____	3.2	3.0	3.6	3.2	2.8
5. Tillable acres per cow	_____	4.6	5.5	5.0	5.1	5.3
6. Fertilizer bought per tillable acre	\$ _____	\$ 6.23	\$ 4.88	\$ 5.19	\$ 5.45	\$ 5.88
7. Other crop expense per tillable acre	_____	5.80	4.69	5.57	5.24	5.17
8. Tractor and machinery expense per crop acre	_____	22.25	20.38	19.40	19.25	19.79

Table 12. Distribution of Acres in Farm on Specialized Dairy Farms, Southern Minnesota, 1968-1969 (continued)

	35-44 cows		45-64 cows		65 cows and over		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings		Average	Low 1/5 labor earnings
1.	23.8	21.6	16.6	20.0	20.2	16.2	27.6
2.	13.6	7.6	13.3	5.8	10.3	10.3	18.7
3.	49.2	45.5	43.4	59.8	60.2	71.3	64.3
4.	16.9	22.0	26.6	27.5	26.0	37.8	31.7
5.	23.7	10.8	15.3	16.5	15.1	12.0	20.9
6.	49.3	55.5	59.8	63.7	70.9	65.9	113.3
7.	9.2	8.7	4.7	13.8	12.8	6.7	3.5
8.	15.5	10.1	14.4	11.1	13.2	13.5	18.7
9.	201.2	181.8	194.1	218.2	228.7	233.7	298.7
10.	287.4	255.5	272.2	306.1	316.4	312.0	435.6

Table 13. Per Acre Yields of Main Crops on Specialized Dairy Farms, Southern Minnesota 1968-1969 (continued)

	35-44 cows		45-64 cows		65 cows and over		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings		Average	Low 1/5 labor earnings
1.	67.4	65.2	72.1	60.4	60.9	64.4	69.5
2.	95.0	86.6	83.0	100.2	87.9	78.8	95.0
3.	15.8	14.5	12.5	15.6	14.6	13.0	16.1
4.	3.9	3.4	3.0	4.0	3.6	3.6	4.2
5.	5.1	4.6	5.0	4.1	4.3	4.5	3.6
6.	\$ 5.59	\$ 6.05	\$ 6.68	\$ 6.93	\$ 7.07	\$ 7.13	\$ 8.13
7.	5.12	5.85	6.41	6.52	6.45	6.01	5.83
8.	20.34	22.70	23.09	25.26	24.31	25.53	24.22



Table 14. Selected Characteristics of Specialized Dairy Farms, Southern Minnesota, 1968-1969

Item	Your farm	All dairy farms	Less than 25 cows	25-34 cows		
				High 1/5 labor earnings	Average	Low 1/5 labor earnings
Dairy cattle						
1. Cows per farm		40	20	32	30	30
2. Production per cow (pounds)		11286	10717	12582	11186	9934
Land						
3. Tillable acres per farm		184	110	157	155	156
4. Tillable acres per cow		4.6	5.5	5.0	5.1	5.3
Labor						
5. Number of workers		1.6	1.2	1.4	1.4	1.5
6. Cows per worker		25.1	16.7	22.6	21.6	19.7
7. Milk produced per worker		283279	178974	284353	241618	195700
Capital						
8. Total capital managed \$		\$82169	\$38359	\$61276	\$62165	\$69608
9. Capital managed per cow		2044	1918	1939	2051	2360
10. Capital managed per worker		51356	31966	43769	44404	46405
Return to operator labor						
11. Total farm receipts \$		\$34940	\$16463	\$32394	\$26293	\$22418
12. Total farm expenses		26905	12343	20952	19791	21331
13. Labor earnings		8035	4120	11442	6502	1087
14. Labor earnings per cow		200	206	362	215	37
Return to capital						
15. Return to capital managed \$		\$ 6571	\$ 238	\$ 8060	\$ 3938	\$-1062
16. Return per dollar capital managed		8.0%	0.6%	14.5%	6.3%	-1.5%

Table 14. Selected Characteristics of Specialized Dairy Farms, Southern Minnesota, 1968-1969 (continued)

	35-44 cows		45-64 cows		65 cows and over		
	High 1/5 labor earnings	Average	Low 1/5 labor earnings	High 1/5 labor earnings		Average	Low 1/5 labor earnings
Dairy cattle							
1.	39	39	39	53	53	52	82
2.	12564	11530	10180	12041	11380	10757	11516
Land							
3.	201	182	194	218	229	234	299
4.	5.1	4.6	5.0	4.1	4.3	4.5	3.6
Labor							
5.	1.4	1.6	1.6	1.8	1.8	1.8	2.2
6.	27.9	24.6	24.2	29.2	29.7	28.7	37.4
7.	350535	283638	246356	351597	337986	308726	430698
Capital							
8.	\$86255	\$82460	\$89250	\$105782	\$111138	\$119769	\$150415
9.	2206	2098	2306	2011	2081	2316	1830
10.	61611	51538	55781	58768	61743	66538	68370
Return to operator labor							
11.	\$41394	\$34517	\$32592	\$51864	\$46507	\$39768	\$67999
12.	27496	26383	29484	36800	36851	36820	51 07
13.	13898	8134	3108	15064	9656	2948	16392
14.	355	207	80	286	181	57	199
Return to capital							
15.	\$12626	\$ 6666	\$ 2005	\$14939	\$ 9822	\$ 3622	\$18916
16.	14.6%	8.1%	2.2%	14.1%	8.8%	3.0%	12.6%

## V. CONCLUDING STATEMENT

Table 14 is designed to give the reader a brief look at some of the important characteristics of the farms studied. The first four sections of the table emphasize resources used: dairy cattle, land, labor and capital; returns to labor and capital are shown in the last two parts of the table.

The following conclusions seem appropriate:

First, differences in earnings are greater within size categories than between size categories.

Second, the major source of this variation in earnings within size category is efficiency in using somewhat similar sets of resources rather than using different sets of resources.

Third, individual preferences may be just as important as economic considerations in determining herd size. The farmer who does an outstanding job with a medium sized herd may be perfectly rational in deciding not to expand. The additional income from expansion may not be sufficient to cover additional labor, investment, risk and managerial stress "costs" involved.

Finally, few farmers are going to be satisfied with being "average" during a period when production and family living costs are rising. Those considering expansion during the next few years should have accomplishments comparing favorably with the farms that are in the high 20 percent in earnings in 1968 and 1969. The below average and average producers will reap greater rewards from improved efficiency than increased size.