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**SPECIALIZED DAIRY FARMS  
IN SOUTHERN MINNESOTA**

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## INTRODUCTION

Dairying is one of the most important farm enterprises in Minnesota. Approximately 38 percent of the 97,797 farmers in Minnesota in 1971 maintained dairy cows. The number of farms with small herds (less than 30 cows) has been decreasing while the number maintaining 30 cows or more have been increasing.<sup>1/</sup> 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 present 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, credit agency personnel, and others with "benchmark" information for making such an appraisal. The report summarizes business records of 184 specialized dairy farms in southern Minnesota for 1971 and 226 for 1972. Vocational-technical institutes at Austin, Jackson, Mankato, Willmar, and Winona, and the Southeastern and Southwestern Minnesota Farm Management Associations provided the individual farm record summaries.

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.

1. Minnesota Agricultural Statistics, 1973, State-Federal Crop and Livestock Reporting Service, Minnesota Department of Agriculture, March 1973, p. 89.

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 groups. Therefore, for each of the three intermediate size categories, the tables also report data for the highest 25 percent and lowest 25 percent of the farms in labor earnings.

TABLE 1. Number of Farms Reported in Size Categories

Herd Size	Two-Year		
	1971	1972	Average
Less than 25 cows	17	30	23
25-34 cows	58	66	62
35-44 cows	51	53	52
45-64 cows	38	58	48
65 cows and over	<u>20</u>	<u>19</u>	<u>20</u>
Total specialized dairy farms	184	226	205

Simple arithmetic averaging is used throughout the report. Calculations were made for each year and the 1971 and 1972 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 capital managed. The second section studies earnings on both a cash and an enterprise basis. A detailed appraisal of the dairy and crop programs 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.

TABLE 2. Capital Managed on Specialized Dairy Farms, Southern Minnesota, 1971-72

Item	Your Farm	All dairy farms	25-34 cows				35-44 cows				45-64 cows				65 cows and over
			High 1/4 labor earnings	Low 1/4 labor earnings	Average	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	Less than 35 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	Less than 45 cows	
1. Acres per farm	277	190	258	236	264	288	277	238	362	317	294	420			
2. Cows per farm	43	21	32	31	30	40	40	40	54	54	53	89			
3. Number of workers	1.6	1.2	1.4	1.4	1.5	1.6	1.6	1.7	2.0	1.8	1.8	2.4			
Average capital managed as of January 1															
4. Dairy cows	\$	\$ 13318	\$ 6156	\$ 9310	\$ 8632	\$ 13017	\$ 11684	\$ 10940	\$ 17954	\$ 17423	\$ 17175	\$ 29019			
5. Other dairy cattle		7408	3182	5484	5712	8417	7378	6201	10001	9590	9233	13407			
6. Other livestock		592	228	580	414	540	443	330	1296	1097	974	716			
7. Crops and feed		8653	3670	6523	5968	9034	8667	8122	12405	11600	11102	16113			
8. Auto & truck (fm.sh.)		1580	1144	1582	1465	1354	1546	1756	1927	1888	1836	1845			
9. Tractors & crop mach.		11022	4603	8743	8108	11676	11401	11357	15245	14817	14720	17892			
10. Livestock equipment		4154	925	2638	2776	3060	3878	3715	6584	5718	5679	9300			
11. Farm buildings*		22858	7933	15346	15027	15315	34286	34617	46018	43273	50460	55211			
12. Land		32459	18479	25620	23314	22870	21610	23342	30414	31474	28398	48418			
13. Total capital managed as of January 1	\$	\$102044	\$46320	\$77186	\$71866	\$75224	\$104814	\$98272	\$100380	\$141844	\$136880	\$139577	\$191921		
14. Total capital managed as of December 31	\$	\$109754	\$50543	\$83328	\$77089	\$78629	\$114993	\$104698	\$101924	\$154574	\$145974	\$144860	\$211583		
15. Av. total capital mgd.	\$	\$105899	\$48432	\$80257	\$74478	\$76926	\$109904	\$101485	\$101152	\$148209	\$141427	\$142218	\$201752		
16. Av. total capital mgd. per worker	\$	\$66187	\$40360	\$57326	\$53198	\$51284	\$68690	\$63428	\$59955	\$74104	\$78570	\$79010	\$84063		

\* Does not include value of the dwelling.

TABLE 3. Capital Managed Per Cow on Specialized Dairy Farms as of January 1, Southern Minnesota, 1971-1972

Item	Your Farm	All dairy farms	25-34 cows				35-44 cows				45-64 cows				65 cows and over
			High 1/4 labor earnings	Low 1/4 labor earnings	Average	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	Less than 35 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	Less than 45 cows	
1. Dairy cow	\$	\$ 310	\$ 293	\$ 325	\$ 300	\$ 288	\$ 325	\$ 292	\$ 274	\$ 333	\$ 323	\$ 324	\$ 326		
2. Other dairy cattle		172	152	180	177	190	210	184	155	185	178	174	151		
3. Other livestock		14	11	18	13	14	14	11	8	24	20	18	8		
4. Crops and feed		201	175	204	192	226	217	203	203	230	215	209	181		
5. Auto and truck		37	54	49	47	51	34	44	44	36	35	35	21		
6. Tractors & crop machines		236	219	273	262	290	292	285	284	282	274	278	201		
7. Livestock equipment		97	44	82	90	102	90	97	93	122	106	107	104		
8. Farm buildings*		531	378	480	485	510	857	792	865	852	801	952	620		
9. Land		755	880	801	752	852	572	540	584	563	583	536	544		
10. Total capital per cow January 1	\$	\$ 2373	\$ 2206	\$ 2412	\$ 2318	\$ 2507	\$ 2620	\$ 2457	\$ 2510	\$ 2627	\$ 2535	\$ 2633	\$ 2156		
11. Average total capital per cow	\$	\$ 2463	\$ 2306	\$ 2508	\$ 2403	\$ 2564	\$ 2875	\$ 2617	\$ 2529	\$ 2862	\$ 2703	\$ 2733	\$ 2377		

\*Not including the value of the farm dwelling.

## CAPITAL MANAGED

The average value of landlord and operator capital managed for the various sizes of dairy farms is reported in table 2. Investments increased with herd size, ranging from \$48,432 for the smallest herd size group, averaging 21 cows, to \$201,752 for the largest herd size group, averaging 89 cows. Capital managed per worker average \$66,187, ranging from \$40,360 for the smallest herd size to \$84,000 for the largest. This reflects the marked substitution of capital for labor as herds are expanded. All size groups reported increases in capital managed, ranging from 2 to 10 percent annually in 1971 and 1972.

Table 3 reports investment data on a per cow basis. With the exception of the largest herd size, investment per cow tended to increase as herd size increased. It ranged from \$2306 for the 21 cow herds to \$2703 for the 54 cow herds. Over half of this difference was due to larger investments in live-stock equipment and buildings on the larger farms. This likely reflects newer construction on these larger operations, while facilities on the smaller farms are more fully depreciated. Investment per cow for the very largest herds approximated that of the smallest (\$2377 versus \$2306). Relatively low per cow investments in crop machinery and buildings were largely responsible for the largest herd size having such a low investment level. This suggests that some capital efficiencies can be gained at these larger herd sizes.

There was little difference in investment per cow between the high and low one-fourth earnings groups in the 25-34 and 45-64 cow herd size groups. The high earnings group of the 35-44 herd size had a slightly higher investment per cow than the low earnings group, due largely to investment values placed on cows and replacements.

## Reported vs. Current Values:

The investment data discussed above deviate somewhat from current market values. For example, in the records analyzed, dairy cows are normally inventoried at market value when they enter the herd. The resultant cow price average lags below current prices during periods of increasing cow prices such as we have just experienced. Present cow and replacement heifer prices would suggest an investment figure closer to \$800 per cow, rather than the approximate \$500 figure reported.

Likewise, land as well as improvements are valued at cost and have not been corrected for price inflation which occurred after the farms were purchased. If an allowance of \$15,000 for the dwellings is added to the reported value of land and buildings, the average per acre value for the study group is about \$255, ranging from \$218 for the smallest herds to \$282 for the largest. Comparison with an estimated \$332 market value reported in the area<sup>1</sup> would suggest that this is at least \$50 to \$115 below current market prices in 1971, or \$22,160 for the average size farm of 277 acres. Allocating about 6 acres per cow, this suggests that the real estate figure is at least \$480 per cow too low. Most of the other farm assets reflect close to current market prices.

Thus, it appears that on a current market basis, the average investment per cow is closer to \$3200 than the \$2460 reported in the study. This, in turn, would bring total investment to about \$138,000 for the average sized herd and to about \$285,000 for the largest herds.

1. See Mandale, Maurice and Phillip M. Raup, "The Minnesota Real Estate Market in 1972," Economic Study Report S73-1, Department of Agricultural and Applied Economics, University of Minnesota, April 1973.

TABLE 4. Cash Statement for Specialized Dairy Farms, Southern Minnesota, 1971-1972

	Your Farm	All dairy farms	25-34 cows			35-44 cows			45-64 cows			65 cows and over	
			High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average		
<b>RECEIPTS</b>													
1. Milk Sales	\$	\$26862	\$10896	\$21704	\$18359	\$16561	\$27645	\$25204	\$22796	\$36924	\$34323	\$28420	\$59270
2. Dairy cattle sold		6218	3268	5856	4813	4568	6862	6274	5498	7906	7714	7422	10478
3. Other livestock sold		1131	462	1426	916	880	1096	890	763	2517	2021	1960	1074
4. Crops sold		2462	1032	1898	1655	1556	2923	2952	2898	3851	3131	3291	3988
5. Other cap. assets sold		247	152	203	165	154	232	188	194	346	318	279	604
6. Work off the farm		290	284	354	287	260	518	287	296	357	315	200	312
7. Misc. farm income		776	682	458	641	457	902	755	429	933	872	800	1072
8. Total farm sales	\$	\$37986	\$16756	\$31889	\$26836	\$24436	\$40178	\$36550	\$32874	\$52834	\$48694	\$42372	\$76798
9. Incr. in farm cap.		7711	4223	6142	5223	3405	10179	6426	1544	12730	9094	5283	19662
10. Fam. living from farm		508	340	512	453	408	555	520	462	621	545	403	763
11. Total farm receipts	\$	\$46205	\$21319	\$38543	\$32512	\$28249	\$50912	\$43496	\$34880	\$66185	\$58333	\$48058	\$97223
<b>EXPENSES</b>													
12. Dairy cattle bought	\$	\$ 1329	\$ 1312	\$ 1006	\$ 760	\$ 786	\$ 1113	\$ 1518	\$ 1877	\$ 488	\$ 1509	\$ 1936	\$ 2246
13. Other livestock bought		98	18	83	89	138	29	49	97	64	170	536	154
14. Miscel. livestock exp.		1714	605	1390	1118	1027	1504	1618	1556	2394	2330	1931	3761
15. Feed bought		3966	2004	3104	2920	3172	2835	3582	4208	4351	4642	5086	8993
16. Fertilizer & lime		1440	468	1194	988	896	1360	1423	1458	2049	2044	2046	2622
17. Other crop expenses		1486	522	1024	1036	1081	1458	1481	1414	2134	2016	2068	2791
18. Custom work hired		1817	754	1552	1279	1069	1648	1761	1618	2196	2344	1985	3688
19. Gas, oil, grease		1168	682	968	907	876	1014	1106	1228	1500	1386	1337	2186
20. Repairs--auto, truck tractors, crop mach.		1684	792	1303	1284	1540	1536	1664	1828	2101	2134	2086	2992
21. Repairs--real estate		546	202	459	392	349	446	484	471	548	700	632	1205
22. Repairs--livestk. equip.		386	125	255	227	245	392	355	318	456	506	426	1015
23. Wages of hired labor		1253	223	668	608	850	1077	1110	1196	2399	1862	1392	3411
24. Electricity		552	256	409	420	430	540	545	554	748	702	616	993
25. Taxes		1210	600	1029	874	928	1278	1240	1222	1609	1531	1368	2153
26. Gen. farm expense		694	319	512	530	518	685	746	756	734	834	876	1192
27. Total cash opr. exp.	\$	\$19343	\$ 8912	\$14956	\$13432	\$13905	\$16915	\$18682	\$19801	\$24131	\$24710	\$24321	\$39402
28. Power & mach. bought		4281	1921	3428	3108	2906	4950	4026	3059	7738	6281	6131	6621
29. Livestk. equip. bought		1482	859	518	742	717	1900	1492	1108	1567	1946	1357	3391
30. Bldgs. & RE improve.		3506	1114	1469	2211	2239	2630	2130	970	4155	4281	2792	11906
31. Total farm purchases	\$	\$28612	\$12806	\$20371	\$19493	\$19767	\$26395	\$26330	\$24938	\$37591	\$37218	\$34601	\$61320
32. Decr. in farm capital		--	--	--	--	--	--	--	--	--	--	--	--
33. Interest @ 6%		6354	2906	4815	4468	4615	6594	6089	6069	8893	8485	8533	12105
34. Unpaid family labor		1210	430	518	820	1276	585	1144	1576	727	1515	1845	2783
35. Board for hired labor		100	24	48	75	134	60	51	36	236	190	206	194
36. Total expenses	\$	\$36276	\$16166	\$25752	\$24856	\$25792	\$33634	\$33614	\$32619	\$47447	\$47408	\$45185	\$76402
37. Labor earnings	\$	\$ 9929	\$ 5153	\$12791	\$ 7656	\$ 2457	\$17278	\$ 9882	\$ 2261	\$18738	\$10925	\$ 2873	\$20821
38. Net cash income	\$	\$ 9374	\$ 3950	\$11518	\$ 7343	\$ 4669	\$13783	\$10220	\$ 7936	\$15243	\$11476	\$ 7771	\$15478

(line 11 - line 36)  
(line 8 - line 31)

## EARNINGS STATEMENTS

### Cash Statement--Total Farm Basis

Cash receipts and expenses are itemized in table 4. Any landlord's share is included to make records comparable on a total farm basis. Labor earnings is the amount that would be left as salary to the operator after he has paid hired man's wages for unpaid family labor and a charge of six percent interest on average capital managed.<sup>1/</sup> Labor earnings increased with herd size. Herds averaging 21 cows yielded \$5153 labor earnings, while herds of 31 cows averaged \$7656, herds of forty cows averaged \$9882, and herds of 54 cows averaged \$10,925. Labor earnings for the largest herds (average size of 89 cows) were \$20,821.

Large variation in labor earnings is evidenced within the intermediate size categories. In each size

1. Items 10 and 33 in table 4, increases and decreases in farm capital, are also included in labor earnings calculations. Increases or decreases are the difference in the average farm capital between January 1 and December 31, as shown on 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. Since purchases of capital items, such as machinery, equipment and buildings, are used for more than one year, only the annual depreciation

group, the highest 25 percent in labor earnings averaged well over \$10,000 above the lowest 25 percent. This difference in earnings was due mainly to differences in gross sales and inventory changes, rather than to differences in cow numbers or total expenses. These differences can best be observed when the cash statement is analyzed on a per-cow basis in the next section.

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 and sales. It is apt to be low during years when a major expenditure is made for new buildings or for a large farm machine. Differences in net cash income between high and low earnings groups were less than differences in labor earnings because wide fluctuations in inventory changes were not considered.

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enters into the calculation of labor earnings by showing increases in capital as a receipt and decreases as an expense.

- (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.

Table 5. Cash Statement on a Per Cow Basis for Specialized Dairy Farms, Southern Minnesota, 1971-1972

Item	Your Farm	25-34 cows				35-44 cows				45-64 cows			
		All dairy farms	Less than 25 cows	High 1/4 labor earnings	Average earnings	Low 1/4 labor earnings	High 1/4 labor earnings	Average earnings	Low 1/4 labor earnings	High 1/4 labor earnings	Average earnings	Low 1/4 labor earnings	High 1/4 labor earnings
<b>RECEIPTS</b>													
1. Milk sales	\$	625	\$ 519	\$ 678	\$ 591	\$ 552	\$ 691	\$ 630	\$ 570	\$ 684	\$ 636	\$ 536	\$ 666
2. Dairy cattle sold		144	156	183	155	152	172	157	137	146	143	140	118
3. Other livestock sold		26	22	45	30	29	27	22	19	47	37	37	37
4. Crops sold		57	49	59	53	52	73	74	72	71	58	62	45
5. Other cap. assets sold		6	7	6	6	5	6	5	7	6	6	5	7
6. Work off the farm		7	13	11	9	9	13	7	7	7	6	4	3
7. Misc. farm income		18	32	14	21	15	23	19	11	17	16	15	12
8. Total farm sales	\$	883	\$ 798	\$ 996	\$ 866	\$ 814	\$ 1005	\$ 914	\$ 821	\$ 978	\$ 902	\$ 799	\$ 863
9. Incr. in farm capital		179	201	192	168	114	255	160	39	236	168	100	221
10. Fam. living from farm		12	16	16	15	14	14	13	12	12	10	8	8
11. Total farm receipts	\$	1074	\$ 1015	\$ 1204	\$ 1049	\$ 942	\$ 1274	\$ 1087	\$ 872	\$ 1226	\$ 1080	\$ 907	\$ 1092
<b>EXPENSES</b>													
12. Dairy cattle bought	\$	31	\$ 62	\$ 31	\$ 25	\$ 26	\$ 28	\$ 38	\$ 47	\$ 9	\$ 28	\$ 37	\$ 25
13. Other livestock bought		2	1	3	3	5	7	1	2	1	3	10	2
14. Misc. livestock expense		40	29	43	36	34	37	40	39	44	43	36	42
15. Feed bought		92	95	97	94	106	70	89	105	80	86	96	101
16. Fertilizer & lime		33	22	37	32	30	34	35	36	44	38	39	30
17. Other crop expenses		35	26	32	33	36	36	37	35	40	37	39	31
18. Custom work		42	36	49	41	36	40	44	40	41	44	37	41
19. Gas, oil, grease		27	32	30	29	29	25	28	31	28	26	25	25
20. Repairs-auto, truck, tractors, cr. mach.		39	38	41	41	51	37	42	46	40	40	39	34
21. Repairs--real estate		13	10	14	13	12	11	12	12	10	13	12	14
22. Repairs--livst. equip.		9	6	8	7	8	10	9	8	8	9	8	12
23. Wages of hired labor		29	11	21	20	28	26	28	30	44	35	26	38
24. Electricity		13	12	13	14	14	13	14	14	14	13	12	11
25. Taxes		28	29	32	28	31	32	31	31	30	28	26	24
26. General farm expense		16	15	16	17	17	17	19	19	14	15	16	13
27. Total cash opr. exp.	\$	449	\$ 424	\$ 467	\$ 433	\$ 463	\$ 423	\$ 467	\$ 495	\$ 447	\$ 458	\$ 458	\$ 443
28. Power & mach. bought		100	91	107	100	97	124	101	76	143	116	116	74
29. Livst. equip. bought		34	42	16	24	24	47	37	28	29	36	26	38
30. Bldg. & RE improve.		82	53	46	72	75	66	53	24	77	79	53	134
31. Total farm purchases	\$	665	\$ 610	\$ 636	\$ 629	\$ 659	\$ 660	\$ 658	\$ 623	\$ 696	\$ 689	\$ 653	\$ 689
32. Decr. in farm capital		--	--	--	--	--	--	--	--	--	--	--	--
33. Interest @ 5.5%		148	138	150	144	154	165	152	152	165	157	161	136
34. Unpaid family labor		28	21	16	27	43	14	29	39	14	28	35	31
35. Board for hired labor		2	1	2	2	4	3	1	1	4	4	4	2
36. Total expenses	\$	843	\$ 770	\$ 804	\$ 802	\$ 860	\$ 842	\$ 840	\$ 815	\$ 879	\$ 878	\$ 853	\$ 858
37. Labor earnings	\$	231	\$ 245	\$ 400	\$ 247	\$ 82	\$ 432	\$ 247	\$ 57	\$ 347	\$ 202	\$ 54	\$ 234

### Cash Statement--Per Cow Basis

Table 5 expresses the cash statement on a per-cow basis. Looking first at labor earnings (line 37), it can be observed that there was little difference in the average labor earnings per cow among the five size groups studied. The larger farms tended to have somewhat higher total farm receipts while the smaller units had lower total expenses, thus the similarity in earnings per cow.

As indicated, total farm receipts per cow tended to increase slightly with herd size, ranging from \$1015 for the smallest herds to \$1092 for the largest. The largest herd size had about \$150 more milk sales per cow (due to a higher milk price and production per cow) than the smallest herds. This was partially offset by the small herds having slightly higher dairy cattle and livestock sales per cow. Compared with the three intermediate size groups, the largest herd size group had somewhat higher milk sales and changes in inventory while the other herds tended to

have higher dairy cattle, other livestock and crop sales on a per-cow basis.

Total farm expenses per cow tended to increase slightly with size. The major source of this difference was in the capital purchases area, suggesting that more expansion-oriented adjustments were taking place on the larger units.

Within each of the three intermediate size groups, the high one-fourth earnings groups had labor earnings of about \$150 to \$200 per cow higher than the average for the group, while the low one-fourth group had earnings \$150 to \$200 below the average. This wide difference appears to be associated almost entirely with differences in receipts per cow, as total expenses were generally quite similar. The high earnings herds tended to have \$125 to \$150 higher milk sales, \$20 to \$40 higher cattle sales and \$75 to \$200 greater increase in inventory per cow relative to the low earnings herds.



Table 6. Earnings on Specialized Dairy Farms, Enterprise Statement, Southern Minnesota, 1971-1972

Item	Your Farm	25-34 cows				35-44 cows				45-64 cows				65 cows and over
		All dairy farms	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average earnings	High 1/4 labor earnings	Low 1/4 labor earnings	Average earnings	High 1/4 labor earnings	Low 1/4 labor earnings	Average earnings		
<b>INCOME</b>														
1. Dairy cattle	\$	\$34991	\$14969	\$29918	\$24904	\$22324	\$37836	\$33387	\$29056	\$49308	\$44004	\$35662	\$73498	
2. Other livestock		874	424	1232	794	745	888	760	442	2006	1358	943	919	
3. Total livestock	\$	\$35865	\$15393	\$31150	\$25698	\$23069	\$38724	\$34147	\$29498	\$51314	\$45362	\$36605	\$74417	
4. Feed fed		15814	7346	12597	11321	11390	15032	14855	14800	20350	20390	19675	31760	
5. Return over feed	\$	\$20051	\$8047	\$18553	\$14377	\$11679	\$23692	\$19292	\$14698	\$30764	\$24972	\$16930	\$42657	
6. Crops and feed off farm		12644	6189	11109	9070	8212	14792	12322	9916	18144	16272	14961	24122	
7. Income from labor		154	110	207	184	203	166	134	215	190	166	150	145	
8. Misc. farm income		776	682	458	641	458	902	755	429	933	872	800	1072	
9. Total income	\$	\$33625	\$15028	\$30327	\$24272	\$20552	\$39552	\$32503	\$25258	\$50031	\$42282	\$32841	\$67996	
<b>EXPENSES</b>														
10. Truck and auto	\$	\$1602	\$963	\$1384	\$1334	\$1405	\$1454	\$1578	\$1671	\$2063	\$1939	\$1946	\$2527	
11. Electricity		552	255	410	420	430	540	545	554	748	702	616	993	
12. Tractors and crop machinery		4938	2138	3873	3598	3767	4569	4747	4720	6381	6483	6314	9276	
13. Lvstck. equipment		1178	380	776	764	848	1188	1090	1022	1628	1646	1657	2589	
14. Buildings		2269	789	1589	1578	1934	2130	2046	2050	2681	3051	2616	4910	
15. Misc. lvstck. exp.		1714	605	1390	1118	1027	1504	1618	1556	2394	2330	1931	3761	
16. Labor*		3185	920	1758	1931	2623	2332	2922	3378	4162	4356	4111	7669	
17. Taxes		1210	600	1029	875	928	1278	1240	1222	1609	1531	1368	2153	
18. General farm expense		694	319	512	530	518	685	746	736	734	834	876	1192	
19. Interest on capital managed		6354	2906	4815	4468	4615	6594	6089	6068	8893	8485	8533	12105	
20. Total expenses	\$	\$23696	\$9875	\$17536	\$16616	\$18095	\$22274	\$22621	\$22997	\$31293	\$31357	\$29968	\$47175	
21. Labor earnings	\$	\$9929	\$5153	\$12791	\$7656	\$2457	\$17278	\$9882	\$2261	\$18738	\$10925	\$2873	\$20821	
22. Percent of income from livestock		60%	54%	61%	59%	57%	60%	59%	58%	61%	59%	51%	63%	
23. Percent of income from crops		38%	41%	37%	37%	40%	37%	38%	39%	36%	38%	46%	35%	

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

#### Enterprise Statement--Total Farm Basis

The data in table 6 show total farm earnings on a so-called enterprise basis. Instead of stressing purchases and sales, the enterprise statement stresses net value produced by the productive enterprises and net expenses associated with the service enterprises. 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 6 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 include 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 does reflect directly the value added by the productive enterprises and the net expense for each of the service enterprises.

Table 7. Earnings per Dairy Cow on Specialized Dairy Farms, (Enterprise Basis), Southern Minnesota, 1971-1972.

Item	Your dairy farm	25-34 cows				35-44 cows				45-64 cows			
		All dairy farms	Less than 25 cows	High 1/4 labor earnings	Average earnings	Low 1/4 labor earnings	High 1/4 labor earnings	Average earnings	Low 1/4 labor earnings	High 1/4 labor earnings	Average earnings	Low 1/4 labor earnings	High 1/4 labor earnings
1. Number of cows		43	21	32	31	30	40	40	40	54	54	53	89
<b>NET VALUE PRODUCED-PRODUCTIVE ENTERPRISES</b>													
2. Dairy cattle	\$	814	\$ 713	\$ 935	\$ 803	\$ 744	\$ 946	\$ 835	\$ 726	\$ 913	\$ 815	\$ 673	\$ 826
3. Other livestock		20	20	38	26	25	22	19	11	37	25	18	10
4. Total livestock	\$	834	\$ 733	\$ 973	\$ 829	\$ 769	\$ 968	\$ 854	\$ 737	\$ 950	\$ 840	\$ 691	\$ 836
5. Feed fed		368	350	394	365	380	376	372	370	380	377	372	357
6. Return over feed	\$	466	\$ 383	\$ 579	\$ 464	\$ 389	\$ 592	\$ 482	\$ 367	\$ 570	\$ 463	\$ 319	\$ 479
7. Crops and feed		294	295	347	292	274	370	308	248	336	301	282	271
8. Income from work off the farm		4	5	8	6	7	4	3	5	4	3	3	2
9. Misc. farm income		18	32	14	21	15	23	19	11	17	16	15	12
10. Net value produced	\$	782	\$ 715	\$ 948	\$ 783	\$ 685	\$ 989	\$ 812	\$ 631	\$ 927	\$ 783	\$ 619	\$ 764
<b>NET EXPENSES-SERVICE ENTERPRISES</b>													
11. Truck & auto	\$	37	\$ 46	\$ 44	\$ 43	\$ 47	\$ 37	\$ 39	\$ 42	\$ 38	\$ 36	\$ 37	\$ 29
12. Electricity		13	12	13	14	14	13	14	14	14	13	12	11
13. Tractors & crop machinery		115	102	121	116	126	114	119	117	118	120	119	105
14. Ivstck. equipment		27	18	24	25	28	30	27	26	30	30	31	29
15. Buildings		53	37	50	51	65	54	51	51	50	57	49	55
16. Misc. Ivstck. expense		40	29	43	36	34	37	40	39	44	43	36	42
17. Labor (wages, board, unpaid)		74	44	55	62	87	58	73	83	77	81	78	86
18. Taxes		28	29	32	28	31	32	31	31	30	28	26	24
19. Gen. farm expense		16	15	16	17	17	17	19	19	14	15	16	13
20. Interest on capital managed		148	138	150	144	154	165	152	152	165	157	161	136
21. Total expense	\$	551	\$ 470	\$ 548	\$ 536	\$ 603	\$ 557	\$ 565	\$ 574	\$ 580	\$ 581	\$ 565	\$ 530
22. Labor earnings	\$	231	\$ 245	\$ 400	\$ 247	\$ 82	\$ 432	\$ 247	\$ 57	\$ 347	\$ 202	\$ 54	\$ 234

Enterprise Statement--Per Cow Basis

In table 7, enterprise statement data are expressed on a per cow basis. Average labor earnings ranged from \$200 to \$250 per cow on all farms. Within the three middle size groups, the high 25 percent in labor earnings show over \$300 more labor earnings per cow than the lowest 25 percent. In this division of income from "productive" enterprises and expense from "service" enterprises, the higher earnings managers obtain much more income per cow while main-

taining equally tight control over expenses.

As a first step in budgeting an adjustment in herd size, a dairy farmer can calculate the approximate income or expense at a given level of management by multiplying the desired number of cows by the figures reported in table 7. If these rough budgets are encouraging, the budgeting can be refined by using other information, including actual record information from the farm when available.

Table 8. Rate Earned on Capital Managed for Specialized Dairy Farms, Southern Minnesota, 1971-1972.

	Your farm	All dairy farms	25-34 cows			35-44 cows			45-64 cows			65 cows and over
			Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	
1. Labor & management earn.	\$ 9929	\$ 5153	\$ 12791	\$ 7656	\$ 2457	\$ 17278	\$ 9882	\$ 2261	\$ 18738	\$ 10925	\$ 2873	\$ 20821
2. Interest on cap. mgd.	6354	2906	4815	4468	4615	6594	6089	6069	8893	8485	8533	12105
3. Total (1+2)	16283	8059	17606	12124	7072	23872	15971	8330	27631	19410	11406	32926
4. Estimated wage for op.	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
5. Return to cap. & mgmt. (3-4)	8283	59	9606	4124	-928	15872	7971	330	19631	11410	3406	24926
6. Average capital mgd.	10599	48432	80257	74478	76926	109904	101485	101152	148209	141427	142218	201752
7. Rate earned on cap. mgd. (3+6)	7.8%	.1%	12.0%	5.5%	0%	14.4%	7.9%	.3%	13.2%	8.1%	2.4%	12.4%

Return on investment

Dairy farm managers, particularly those with larger operations, desire a reasonable return on investment as well as a competitive wage for their labor and management. Table 8 shows the rate earned on capital managed by the various groups of farms studied. The average return for all farms was 7.8 percent, while small farms and low earnings farms showed little if any return to capital. The largest herds and the high earnings herds earned 12 to 15 percent return on capital managed.

Using the procedures shown in table 8, return to capital managed is the residual remaining after an arbitrary charge of \$8,000 has been deducted for the operator's labor. Such a standard charge for all sizes of farms and levels of profitability is probably somewhat unrealistic in that the better operators would likely be able to command higher wages in alternative employment situations than poorer managers. This would suggest that the reported return on capital managed is somewhat understated for the smaller and less profitable

herds and overstated for the larger and more profitable units.

It should also be noted that the amount of capital managed used in the analysis was the reported book value rather than current market values. In the discussion of capital managed, it was noted that land and livestock book values may be undervalued by at least one-fourth compared to current values. Use of current market values would obviously reduce the return on capital for all sizes of farms, placing all but the largest and most profitable at or below current interest rates on savings. The bias, however, would be toward lowering the return on the smaller and least profitable farms most, as their book values appear to be below current market values by a greater amount than the larger and more profitable units.

Thus, one can conclude that the return on investment figures reported tends to overstate somewhat the actual return on investment. However, the relative return among and within herd size groups appears to be quite representative of the differences.

Table 9. Labor Efficiency on Specialized Dairy Farms, Southern Minnesota, 1971-1972.

Item	Your dairy farm	25-34 cows				35-44 cows			45-64 cows			65 cows and over	
		All dairy farms	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings		
Number of workers	1.6	1.2	1.4	1.4	1.4	1.5	1.6	1.6	1.7	2.0	1.8	1.8	2.4
Cows per worker	26.8	17.5	22.9	22.1	20.0	25.0	25.0	23.5	27.0	30.0	29.4	29.4	37.1
Pounds of milk per worker	317448	182735	302811	260843	216200	326700	303850	261907	345168	356700	301599	463060	
Total farm receipts per worker	\$ 28878	\$ 17766	\$ 27531	\$ 23223	\$ 18833	\$ 31820	\$ 27185	\$ 20518	\$ 33092	\$ 32407	\$ 26699	\$ 40510	
Capital managed per worker	\$ 66187	\$ 40360	\$ 57326	\$ 53198	\$ 51284	\$ 68690	\$ 63428	\$ 59955	\$ 74104	\$ 78570	\$ 79010	\$ 84063	

#### 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 9. 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 21 cows invested about \$40,000 per worker as compared to \$84,000 invested per worker on farms with an average of 89 cows. This suggests that it is easier for the owner of larger herds to acquire more equipment and machinery than it is to secure and manage more labor. It also indicates that the larger operator likely places a higher value on his labor and management and hired workers and must substitute capital for labor to keep costs in line.

Table 10. Costs and Returns from Dairy Cows on Specialized Dairy Farms, Southern Minnesota, 1971-1972.

	Your farm	All dairy farms	25-34 cows				35-44 cows				45-64 cows				65 cows and over
			Less than 25 cows	High 1/4 labor earnings	Average	Low 1/4 labor earnings	High 1/4 labor earnings	Average	Low 1/4 labor earnings	High 1/4 labor earnings	Average	Low 1/4 labor earnings	High 1/4 labor earnings		
1. Number of cows		43	21	32	31	30	40	40	40	40	54	54	54	89	
2. Pounds of milk/cow		11812	10442	13248	11780	10810	13068	12154	11131	12784	11890	10243	12487	12487	
3. Pounds of BF/cow		431	378	478	428	399	482	442	408	474	440	376	462	462	
Value of produce per cow	\$	\$618.73	\$516.77	\$691.87	\$607.62	\$558.64	\$696.97	\$640.02	\$581.25	\$695.31	\$639.63	\$543.62	\$672.74	\$672.74	
4. Dairy products															
5. Net increase in value per cow		-8.00	-10.35	-2.52	-4.93	-3.97	-15.20	-8.56	-10.99	-2.85	-8.17	-16.63	-12.86	-12.86	
6. Total value prod.	\$	\$610.73	\$506.42	\$689.35	\$602.69	\$554.67	\$681.77	\$631.46	\$570.26	\$692.46	\$631.46	\$526.99	\$659.88	\$659.88	
Feed cost per cow															
7. Concentrates	\$	\$144.32	\$131.54	\$158.88	\$146.73	\$150.82	\$135.26	\$144.31	\$151.21	\$141.57	\$147.02	\$148.24	\$148.09	\$148.09	
8. Roughages		106.42	98.66	104.54	98.45	96.67	112.56	112.10	116.18	112.06	110.33	114.68	115.50	115.50	
9. Pasture		4.42	7.67	5.52	5.84	4.54	4.17	3.49	3.44	3.90	3.59	3.54	3.83	3.83	
10. Total feed cost	\$	\$255.16	\$237.87	\$268.94	\$251.02	\$252.03	\$251.99	\$259.90	\$270.83	\$257.53	\$260.94	\$266.46	\$264.42	\$264.42	
11. Return over feed cost per cow	\$	\$355.57	\$268.55	\$420.41	\$351.67	\$302.64	\$429.78	\$371.56	\$299.43	\$434.93	\$370.52	\$260.53	\$395.46	\$395.46	
12. Return for \$100 feed	\$	\$239	\$213	\$256	\$240	\$220	\$270	\$243	\$211	\$269	\$242	\$198	\$250	\$250	
13. Feed cost per cwt. of milk	\$	\$2.20	\$2.28	\$2.04	\$2.13	\$2.33	\$1.92	\$2.14	\$2.43	\$2.02	\$2.24	\$2.68	\$2.12	\$2.12	
14. Feed cost per pound of butterfat	\$	\$ .60	\$ .63	\$ .57	\$ .59	\$ .63	\$ .52	\$ .59	\$ .66	\$ .54	\$ .61	\$ .72	\$ .58	\$ .58	
15. Price received per cwt. of milk	\$	\$5.25	\$4.95	\$5.22	\$5.18	\$5.21	\$5.34	\$5.30	\$5.26	\$5.46	\$5.38	\$5.30	\$5.40	\$5.40	
16. Price received per pound of BF	\$	\$1.44	\$1.36	\$1.45	\$1.42	\$1.40	\$1.45	\$1.45	\$1.42	\$1.46	\$1.46	\$1.44	\$1.46	\$1.46	
Feed consumed per cow, lbs.															
17. Concentrates		5663	5190	4249	5815	3673	5478	5579	5453	5528	5783	5769	5779	5779	
18. Hay		6847	6826	1292	6628	1348	7399	7102	8298	6631	6688	7908	7224	7224	
19. Silage		10350	7643	761	9013	766	11169	11420	9888	11529	11546	11769	11866	11866	

Table 11. Costs and Returns from Entire Herd on a Per Cow Basis, Southern Minnesota, 1971-1972

Item	25-34 cows				35-44 cows				45-64 cows					
	Your farm	All dairy farms	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings
1. Number of cows	—	43	22	32	31	30	40	40	40	54	54	54	53	89
2. Number of young stock per cow	—	1.2	1.2	1.4	1.3	1.2	1.4	1.3	1.2	1.3	1.2	1.2	1.0	1.0
3. Total value produced per cow	\$	\$802.97	\$693.82	\$935.07	\$810.30	\$738.15	\$937.11	\$832.30	\$730.19	\$917.16	\$809.08	\$673.96	\$825.53	
4. Feed cost per cow	—	352.56	329.25	374.96	353.03	356.46	358.22	359.75	367.88	357.64	358.31	354.56	351.35	
5. Return over feed per cow	\$	\$450.41	\$364.57	\$560.11	\$457.27	\$381.69	\$578.89	\$472.55	\$362.31	\$559.52	\$450.77	\$319.40	\$474.18	
6. Return for \$100 feed	\$	\$ 228	\$ 211	\$ 249	\$ 230	\$ 207	\$ 261	\$ 231	\$ 198	\$ 256	\$ 226	\$ 190	\$ 235	
Feed per cow, lbs.														
7. Concentrates	—	7153	6593	8151	7467	7356	7012	7077	7023	6986	7264	7020	6955	
8. Hay	—	9902	10174	9895	10000	10409	10496	10032	11352	9701	9566	10589	9921	
9. Silage	—	14764	10846	13758	13054	13548	17435	16993	14502	16736	15741	14118	16540	

THE DAIRY ENTERPRISE

various size groups, milk prices received by high and low earnings groups were substantially the same.

Dairy Cows:

Feed costs and returns and related factors are shown for dairy cows 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 \$269 for herds with less than 25 cows to \$395 for the 89 cow herd size group. The higher earnings farms averaged from \$120 to \$175 more return over feed costs per cow than the low earnings farms. These differences are accounted for mostly by higher milk production per cow resulting in higher milk receipts. Total feed costs per cow were quite similar for high and low earnings farms and by size of herd.

Herds with less than 25 cows received \$4.95 per hundred pounds of milk, while the largest herds received \$5.40 per hundredweight. This likely indicates that the smaller herd owners tended to sell manufacturing milk while the large operations were geared to Grade A milk production. Within the

Entire Herd (Including Replacements):

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 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 need to adjust the ration accordingly.

From a cost of production standpoint, many dairy farm managers consider \$200 return per \$100 feed to be a "break-even" point, because feed ordinarily represents half the total costs involved in producing milk. The averages for all herd sizes in 1971 and 1972 reported returns about \$30 above the break-even point, while the lowest 25 percent in labor earnings for each size category reported right at the \$200 break-even level.



Table 12. Distribution of Acres in Farm on Specialized Dairy Farms, Southern Minnesota, 1971-1972.

Item	Your farm	All dairy farms	25-34 cows			35-44 cows			45-64 cows			65 cows and over	
			Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings		Average
1. Total land farmed	—	277.0	189.9	258.4	236.5	263.6	287.8	277.0	238.2	361.3	317.4	293.8	419.8
2. Total tillable land	—	194.4	116.6	177.0	160.3	159.6	215.2	197.2	173.3	251.1	232.0	231.2	301.0
3. Percent tillable land	—	70.2	61.4	68.5	67.8	60.5	74.8	71.2	72.8	69.5	73.1	78.7	71.7
Percent tillable land in													
4. Oats	—	11.9	19.7	18.1	16.5	14.8	12.0	11.6	10.4	9.8	9.8	10.5	5.2
5. Other small grain	—	3.1	.9	1.9	1.6	3.0	3.2	3.2	1.8	2.3	2.8	2.5	6.6
6. Corn grain	—	27.8	26.1	26.8	26.3	24.2	28.9	27.3	27.1	30.9	30.7	31.9	27.2
7. Corn silage	—	11.9	10.0	8.9	10.9	12.4	13.5	13.6	14.2	10.3	11.0	11.6	12.7
8. Other cultivated crops	—	3.3	2.1	3.8	2.7	1.1	4.5	4.0	3.9	5.0	3.6	2.7	4.0
9. Tillable land in hay	—	30.6	31.0	30.4	30.9	33.6	27.5	28.9	30.9	28.4	29.5	28.1	34.4
10. Tillable land in pasture	—	3.3	2.4	3.7	3.4	1.6	3.3	2.9	2.0	6.3	4.8	3.7	1.3
11. Tillable land not cropped (incl. feed grain prog.)	—	8.1	7.8	6.4	7.7	9.3	7.1	8.5	9.7	7.0	7.8	9.0	8.6

Table 13. Per Acre Yields of Main Crops on Specialized Dairy Farms, Southern Minnesota, 1971-1972.

Item	Your farm	25-34 cows			35-44 cows			45-64 cows			65 cows and over		
		All dairy farms	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings		Low 1/4 labor earnings	
1. Oats, bu.	—	58.4	51.8	60.2	57.1	60.1	65.8	59.5	54.6	64.8	62.0	58.7	59.8
2. Corn grain, bu.	—	88.5	70.2	86.6	81.2	76.3	91.0	88.0	85.6	106.0	99.4	91.2	107.8
3. Corn silage, tons	—	15.0	11.4	15.0	13.5	12.4	15.8	14.8	13.6	18.8	17.5	15.0	18.0
4. Alfalfa hay, tons	—	3.7	3.0	3.6	3.6	3.5	3.8	3.8	3.6	3.9	4.0	4.2	4.1
5. Tillable acres per cow	—	4.5	5.6	5.5	5.2	5.3	5.4	4.9	4.3	4.6	4.3	4.4	3.4
6. Fertilizer bought per tillable acre	\$	7.41	\$ 4.01	\$ 6.75	\$ 6.16	\$ 5.61	\$ 6.32	\$ 7.22	\$ 8.41	\$ 9.59	\$ 8.82	\$ 8.85	\$ 8.71
7. Other crop expense per tillable acre	—	7.64	4.73	5.78	6.46	6.77	6.78	7.51	8.16	8.85	8.91	8.94	6.65
8. Tractor and machinery expense per crop acre	—	28.27	20.08	24.16	24.76	25.84	23.53	26.61	29.72	29.22	31.86	31.06	34.08

#### THE CROPPING PROGRAM

Tables 12 and 13 show the distribution of acres per farm and the yield levels of important crops grown on these farms in 1971 and 1972. Approximately 40 percent of the income on all of these farms is derived from crop production, as was shown in table 6. This fact alone stresses the need for a good dairy farm manager to be able to manage crop production as well. If, however, a good dairyman has difficulty in giving proper attention to his cropping program, he might consider purchasing at least the grain portion of his feed supply if he wishes to enlarge his operation.

These Southern Minnesota dairy farms typically had about 70 percent of their acreage tillable. About 35 percent of the acreage was used for hay and pasture which reflects the rolling, hilly topography of the dominant dairy areas. Another 10-12 percent of the tillable acres were devoted to corn silage. Small grains (primarily oats) accounted for about 15 percent of the acreage; corn for grain, about 30 percent; and

feed grain program (diverted acreage) and other crops, the remaining 10 percent of the tillable acreage. This acreage distribution varied little by size of herd or profitability level. The smaller herds tended to grow slightly more small grains while the larger herds concentrated more on corn for grain. The largest herds concentrated slightly more heavily in roughage production with less emphasis on corn grain and small grains.

The larger farms generally reported higher yields. Likewise, the high earnings farms consistently produced higher per acre yields of corn, oats and corn silage than the low earnings farms. Fertilizer expenditure per tillable acre was greater on the large farms. As a result, the larger and higher earnings farms required fewer tillable acres per cow. Tractor and machinery expense per crop acre averaged about \$28 and showed a constant increase with size of herd. The most profitable herds showed \$2 to \$6 lower costs per acre than the least profitable herds of a comparable size.

Table 14. Selected Characteristics of Specialized Dairy Farms, Southern Minnesota, 1971-1972.

Item	Your dairy farm	23-34 cows				35-44 cows				45-64 cows				
		All dairy farms	Less than 25 cows	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings	Average	High 1/4 labor earnings	Low 1/4 labor earnings
<b>Dairy cattle</b>														
1. Cows per farm	43	21	32	31	40	40	40	40	40	54	54	54	53	89
2. Production per cow (pounds)	11812	10442	13248	11780	13068	12154	11131	12784	11890	10243	12487			
<b>Land</b>														
3. Tillable acres per farm	194	117	177	160	215	197	173	251	232	231	301			
4. Tillable acres per cow	4.5	5.6	5.5	5.2	5.4	4.9	4.3	4.6	4.3	4.4	3.4			
<b>Labor</b>														
5. Number of workers	1.6	1.2	1.4	1.4	1.6	1.6	1.7	2.0	1.8	1.8	2.4			
6. Cows per worker	26.8	17.5	22.9	22.1	25.0	25.0	23.5	27.0	30.0	29.4	37.1			
7. Milk produced per worker	317448	182735	302811	260843	326700	303850	261906	345168	356700	301599	463060			
8. Acres of tillable land per worker	121	97	126	114	134	123	101	125	128	128	125			
<b>Capital</b>														
9. Total capital managed	\$ 105899	\$ 48432	\$ 80257	\$ 74478	\$ 109904	\$ 101485	\$ 101152	\$ 148209	\$ 141427	\$ 142218	\$ 201752			
10. Capital managed per cow	2463	2306	2508	2403	2875	2617	2548	2802	2703	2733	2377			
11. Capital managed per worker	66187	40360	57326	53198	68690	63428	59955	74104	78570	79010	84063			
<b>Return to operator labor</b>														
12. Total farm receipts	\$ 46205	\$ 21319	\$ 38543	\$ 32512	\$ 50912	\$ 43496	\$ 34880	\$ 66185	\$ 58333	\$ 48058	\$ 97223			
13. Total farm expenses	36276	16166	25752	24856	33634	33614	32619	47447	47408	45185	76402			
14. Labor earnings	9929	5153	12791	7656	17278	9882	2261	18738	10925	2873	20821			
15. Labor earnings per cow	231	245	400	247	443	247	57	347	202	54	234			
<b>Return to capital</b>														
16. Return to capital managed	\$ 8283	\$ 59	\$ 9606	\$ 4124	\$ -928	\$ 15872	\$ 7971	\$ 330	\$ 19631	\$ 11410	\$ 3406	\$ 24926		
17. Rate earned on capital	7.8%	.1%	12.0%	5.5%	14.4%	7.9%	.3%	13.2%	8.1%	2.4%	12.4%			

#### 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 amounts and kinds 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 25 percent in earnings in 1971 and 1972. The average and below average producers will reap greater rewards from improved efficiency than from increased size.