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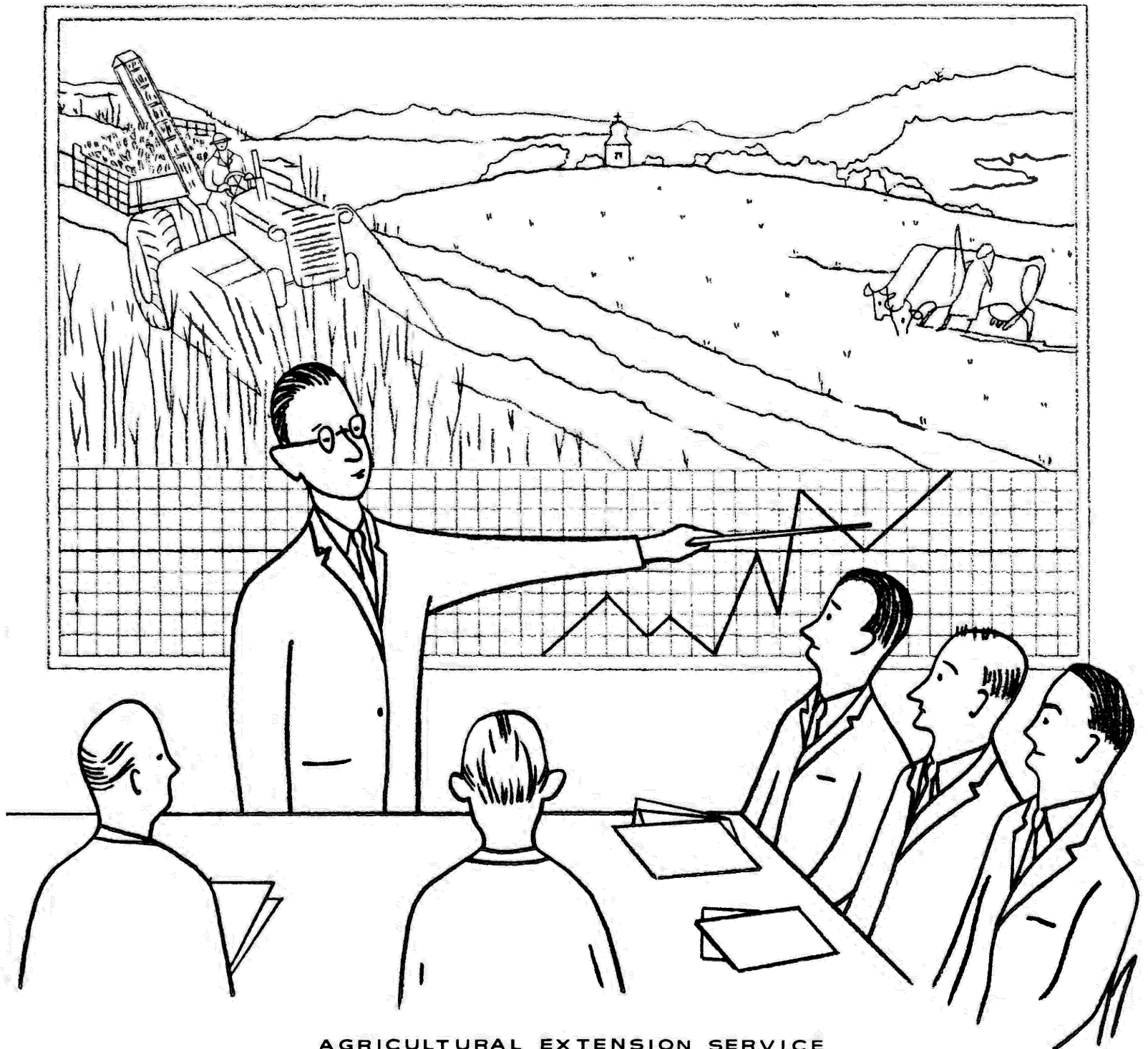
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DAIRY FARM BUSINESS SUMMARY

ELECTRONIC FARM ACCOUNT PROGRAM



AGRICULTURAL EXTENSION SERVICE
VIRGINIA POLYTECHNIC INSTITUTE
BLACKSBURG, VIRGINIA

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DAIRY FARM BUSINESS SUMMARY

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The information contained in this publication does not necessarily represent the situation on all dairy farms in Virginia, since no statistical sampling procedure was used in selecting the farms.

The V.P.I. Electronic Farm Account Program is a joint project of the Virginia Agricultural Extension Service and the Virginia Agricultural Experiment Station. It is conducted by the Department of Agricultural Economics as a segment of its overall educational program in farm management. The analysis figures contained in this summary were made possible through the combined efforts and assistance of Extension personnel in the following counties:

Albemarle	Fairfax	Nottoway
Amelia	Fauquier	Page
Amherst	Floyd	Patrick
Appomattox	Franklin	Pittsylvania
Augusta	Frederick	Powhatan
Bedford	Gloucester	Roanoke
Bland	Grayson	Rockbridge
Botetourt	Halifax	Rockingham
Buckingham	Henry	Russell
Campbell	King & Queen	Shenandoah
Carroll	King William	Smyth
Charlotte	Lee	Spotsylvania
Clarke	Lunenburg	Tazewell
Culpeper	Middlesex	Warren
Cumberland	Montgomery	Washington
Dinwiddie	Nelson	Westmoreland
Essex	Norfolk	Wythe

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Introduction

This is a summary of the farm business records maintained on 126 Grade-A dairy farms and 18 manufacturing milk farms enrolled in the V.P.I. Electronic Farm Account Program during 1962. It is designed for your use in locating weak and strong points in your business, to the end that you might improve the "Profitability" of your dairy operation. The column headed "My Farm" is provided for your use. When you have entered comparable data for your farm, you can compare your operation with the averages contained in the tables. Your county Extension agent can help you find ways to improve your net income.

The first section of this publication contains tables showing averages for 126 Grade-A dairy farms. These farms were first divided into 3 categories based on the number of cows. The group of 29 small farms had less than 30 cows. The 23 large farms had herds of 60 or more cows. The group of 74 medium size farms had 30 to 59 cows.

The Grade-A farms were also divided into 3 categories based on income, as measured by labor earnings. Labor earnings are computed by subtracting a 5% interest charge on the total investment from the net farm income, and adding the value of farm products used in the home. The low income group contained 28 farms which had no labor earnings. The medium income group contained 59 farms with labor earnings up to \$4,999. The high income group was made up of 39 farms with \$5,000 or more in labor earnings.

The distribution of the Grade-A farms in Extension Districts of Virginia are:

District	Total Number Farms	Number of Farms by Size		
		Large	Medium	Small
East Central District	26	4	14	8
Northeast District	6	2	4	0
Northern District	20	9	10	1
Southeast District	4	2	1	1
Southwest District	32	1	22	9
West Central District	<u>38</u>	<u>5</u>	<u>23</u>	<u>10</u>
Total	126	23	74	29

The Southwest District had a smaller than proportionate share of large dairy farms and the Northern District had a larger than proportionate share of large farms. The Northern District also had a smaller than proportionate share of small farms.

The 18 manufacturing milk farms were divided into 2 categories. The low income group contained 8 farms with labor earnings less than \$999. The high income group was made up of 10 farms with \$1,000 or more in labor earnings.

How Do You Stack Up?

Listed below you will find some of the factors associated with high farm profits on Grade-A dairy farms. These factors measure both size and efficiency. The 10 figures listed for each one are in steps of "13-farm averages." For example, the first figure is the average of the top 13 farms in each category; the second figure, the average of the second 13 farms. If your farm figure is closest to the top figure in the list, you are equal to the top 10% of the farms in this publication. If your farm figure is closest to the 5th or 6th figure in the list, you are about average in comparison with the farms in this study. If your farm is closest to the 10th figure, you are equal to the lowest 10% of these farms.

The more factors you excel in, the greater are your chances for success! How well do you stack up?

SIZE MEASUREMENTS		EFFICIENCY MEASUREMENTS		
<u>Number Cows</u>	<u>Man Equivalent</u>	<u>Milk per Cow (lbs.)</u>	<u>PMWD per Man</u>	<u>Milk per Man (lbs.)</u>
94	6.2	13,991	398	266,705
68	4.3	12,203	353	228,322
56	3.5	11,137	322	203,551
48	2.9	10,557	294	190,250
44	2.7	10,046	273	174,848
39	2.4	9,563	257	160,763
35	2.1	9,004	241	140,389
31	1.9	8,346	218	122,608
26	1.6	7,538	201	98,744
21	1.0	5,956	170	68,998
<u>Acres Crops</u>	<u>Total PMWD's</u>	<u>Crop Index</u>	<u>Gross Machine Cost as % Gross Receipts</u>	<u>Cows per Man</u>
333	1,529	198	78	26
202	1,126	163	28	23
141	878	151	24	21
121	765	143	23	18
104	692	136	21	18
90	622	129	20	16
73	557	122	18	15
63	513	115	17	14
50	436	109	15	13
39	346	95	12	9

Summary of Grade-A Dairy Records

Large dairy farms are not always the most profitable. The low income group of dairy farms averaged a \$7,258 larger total investment than the high income group.

It is important that the farmer use his capital in the most productive areas of his business. The high income group averaged 26% of the total investment in live-stock, as compared with 21% in the low income group. The more successful farmers kept their total farm investment down to \$1,605 per cow.

The 1962 dairy records do not show much difference in machinery costs per acre of crops between the high income and low income groups. Machinery and equipment costs differ between the 2 income groups by only \$8 per cow. The important point is that 25¢ of each dollar of receipt went for machinery expense in the low income group, as opposed to only 18¢ in the high income group.

Major differences are not shown, in the 1962 records, between the high and low income groups in labor efficiency or labor costs per acre or per cow. However, low income farms averaged 28¢ of each receipt dollar for labor expense (including the operator and unpaid family labor) compared with 21¢ for the high income group.

The outstanding difference between high and low income groups is in the pounds of TDN (total digestible nutrients) fed per cwt. of milk sold. The low income group averaged 22 lbs. more TDN fed per cwt. of milk. Feed is a major portion of the total cost of producing milk; efficient feed conversion is necessary to show a profit. Low feed efficiency in dairy cattle may be caused by low-quality cows, low-quality feeds, overfeeding relative to milk production, or poor herd health.

High income farms averaged 1,406 lbs. more milk per cow than the low income group, although the low group fed 985 lbs. more TDN per cow. The higher milk production per cow in the high income group enabled that group to sell 19,171 lbs. more milk per man. The high income group sold \$1,847 more milk per man than the low income farms. The difference in value of milk sold per man amounted to \$941 between the groups after being adjusted to the same milk price (\$4.97).

CAPITAL INVESTMENT AND SIZE MEASURES
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
<u>Dollars Invested In:</u>							
Machinery & equipment	\$ 16,184	\$10,259	\$ 6,203	\$12,012	\$ 8,987	\$11,164	_____
Buildings	21,619	12,421	7,118	11,881	11,089	18,043	_____
Land	47,631	29,286	13,460	31,832	23,418	36,783	_____
Dairy cattle	32,719	16,730	7,813	21,514	15,112	17,373	_____
Other livestock	1,508	994	270	218	798	2,158	_____
Feed, seed, supply	9,098	4,472	2,414	6,020	3,888	5,214	_____
TOTAL INVESTMENT <u>1/</u>	<u>\$128,759</u>	<u>\$74,162</u>	<u>\$37,278</u>	<u>\$83,477</u>	<u>\$63,292</u>	<u>\$90,735</u>	_____
<u>Percent of Investment:</u>							
Machinery & equipment	12	14	17	15	14	12	_____
Buildings	17	17	19	14	18	20	_____
Land	37	39	36	38	37	41	_____
Livestock	27	24	22	26	25	21	_____
Feed, seed, supply	7	6	6	7	6	6	_____
Number of cows <u>2/</u>	78	42	24	52	40	45	_____
Total invest. per cow	1,651	1,766	1,553	1,605	1,582	2,016	_____
Man equivalent <u>3/</u>	4.4	2.6	1.8	3.3	2.4	2.8	_____
Total invest. per man	\$ 29,263	\$28,524	\$20,710	\$25,296	\$26,372	\$32,405	_____

1/ The investment values given are the average of the beginning and ending inventories. Machinery, equipment, and building investments are given at the actual undepreciated book value. Land, cattle, and feed inventories are given at the current market value.

2/ Number of cows is calculated from the monthly reported herd size, including milking and dry cows.

3/ Man equivalent is calculated from the hours of operator, unpaid family, and hired labor used on the farm. One man equivalent equals 2,880 hours.

Size as measured by total dollars invested is no guarantee of success. The low income group averaged \$7,258 larger total investment than the high income group. More of the low income farm investment was centered in land and buildings, 61%, as compared with 52% of the high income farm investment. The most productive area of investment for a dairy farm is in dairy cattle. High income farms had 26% of their total investment in livestock, while the low income group had only 21% of their investment in this area. In spite of lower land and building investments on high income farms, they maintained 52 cows, or 7 more than the low income group. Total investment per cow (overhead) was \$411 less on the high income farms.

RECEIPTS
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
Dairy products sold (gross)	\$41,944	\$22,492	\$10,967	\$31,122	\$19,302	\$21,235	_____
Dairy cattle (including inventory change)	4,381	2,512	1,145	4,002	1,718	2,230	_____
Beef cattle (including inventory change)	258	196	75	44	226	268	_____
Swine (including inventory change)	151	111	42	21	150	116	_____
Sheep (including inventory change)	24	79	0	37	76	16	_____
Poultry (including inventory change)	0	171	136	-5	69	454	_____
Other livestock receipts	32	1	1	17	0	6	_____
Crop sales	1,093	1,147	1,826	1,862	950	1,224	_____
Miscellaneous receipts	996	980	694	894	1,040	690	_____
Crops, feed, seed inventory increase	1,185	412	0	934	401	0	_____
TOTAL FARM RECEIPTS	<u>\$50,064</u>	<u>\$28,101</u>	<u>\$14,886</u>	<u>\$38,928</u>	<u>\$23,932</u>	<u>\$26,239</u>	_____
Receipts per dollar invested	\$ 0.39	\$ 0.38	\$ 0.40	\$ 0.47	\$ 0.38	\$ 0.29	_____

The efficiency of capital use (receipts per dollar invested) is 18¢ higher on the high income farms than on low income farms.

There appears to be more livestock diversification on the low income farms. Livestock receipts, other than dairy, amount to \$860 for the low income group and only \$114 for the high income group.

The high income group shows a \$934 feed and supplies inventory increase, as contrasted with a \$192 decrease on low income farms.

EXPENSES
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
Hired labor	\$ 8,232	\$ 3,025	\$ 1,150	\$ 4,756	\$ 2,625	\$ 3,794	_____
Value unpaid family labor	823	547	440	460	546	785	_____
Purchased feed	8,700	5,470	2,484	6,325	4,592	5,687	_____
Fertilizer	3,260	1,808	1,047	2,455	1,634	1,677	_____
Lime	251	109	39	170	95	98	_____
Other crop expenses	977	525	406	761	500	497	_____
Supplies	437	251	85	300	176	321	_____
Machine hire	388	259	166	271	252	268	_____
Gas and oil	1,952	933	543	1,251	802	1,196	_____
Veterinary and medicine	423	267	119	332	203	288	_____
Breeding expenses	413	234	109	294	182	278	_____
Livestock expenses	784	457	182	552	373	487	_____
Milk marketing	3,064	1,852	967	2,095	1,677	1,961	_____
Taxes	512	427	228	424	366	425	_____
Miscellaneous expenses <u>1/</u>	2,365	1,255	817	1,445	1,194	1,574	_____
Real estate decrease							_____
(including maint. & repair)	2,532	1,269	721	1,319	1,132	1,958	_____
Machinery decrease							_____
(including maint. & repair)	5,865	3,150	1,948	4,029	2,610	4,049	_____
Crops, feed, seed, supplies							_____
inventory decrease	0	0	100	0	0	192	_____
TOTAL FARM EXPENSES	\$40,978	\$21,838	\$11,551	\$27,239	\$18,959	\$25,535	_____

1/ Miscellaneous expenses include such items as rent (other than pasture), electricity, telephone, farm subscriptions, and other unclassified business expenses.

Even though the high income group averaged \$1,704 more total expenses than the low income farm, this was more than offset by \$12,689 more total receipts.

PROFIT OR LOSS
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
Total receipts	\$ 50,064	\$28,101	\$14,886	\$38,928	\$23,932	\$26,239	_____
Total expenses	40,978	21,838	11,551	27,239	18,959	25,535	_____
NET FARM INCOME <u>1/</u>	\$ 9,086	\$ 6,263	\$ 3,335	\$11,689	\$ 4,973	\$ 704	_____
Average capital invest.	128,759	74,162	37,278	83,477	63,292	90,735	_____
Interest @ 5%	6,438	3,708	1,864	4,174	3,165	4,537	_____
LABOR INCOME <u>2/</u>	2,648	2,555	1,471	7,515	1,808	-3,833	_____
Value of farm products used in home	469	608	508	587	542	559	_____
LABOR EARNINGS <u>3/</u>	\$ 3,117	\$ 3,163	\$ 1,979	\$ 8,102	\$ 2,350	\$-3,274	_____
% return on invest. <u>4/</u>	5%	5%	3%	11%	4%	-2%	_____
Net return per hour on operator's labor	\$ 0.98	\$ 0.88	\$ 0.56	\$ 2.41	\$ 0.67	\$ -1.52	_____

- 1/ Net farm income is the difference between total receipts and total expenses. No adjustment is made for farm size.
- 2/ Labor income is a measure of the actual return to the farmer for his labor and management, after a charge of 5% interest on the total investment has been deducted from net farm income. Since the deduction for interest is more for larger farms, labor income is a better figure than net farm income to use in comparing farms of unequal size.
- 3/ Labor earnings are computed by adding to labor income those farm benefits (such as milk, meat, and garden produce) received by the farm family. The value of housing is not included in labor earnings because the value of the farm dwelling is not included in the capital investment.
- 4/ Return on investment is a somewhat different look at the profit picture than labor income. All labor (including the operator's labor computed at \$200 per month) is charged as an expense against net farm income. The remaining income is considered return to investment, and when divided by the total investment gives the return on investment.

The \$10,985 difference in net farm income between the high and low groups indicates the wide variation between farms of roughly the same size engaged in dairy production.

The variation in average labor earnings between the large and small farms (\$1,138) is not nearly so large as the variation between high and low income farms (\$11,376).

The low income group failed to achieve a level of return to investment that could have been obtained in any sound savings or investment program.

MACHINERY AND EQUIPMENT COSTS
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
<u>Crops:</u>							
Machinery and equipment investment	\$10,921	\$6,840	\$4,095	\$8,230	\$5,890	\$7,424	_____
Interest on investment @ 5%	546	342	205	412	295	371	_____
Depreciation	2,476	1,483	1,114	1,905	1,283	1,749	_____
Gas, oil, and repairs	3,236	1,563	891	2,259	1,349	1,724	_____
Machine work hired	366	223	195	229	253	237	_____
Electricity	60	20	58	36	18	74	_____
Miscellaneous <u>1/</u>	328	205	123	247	177	223	_____
Gross crop machinery and equipment cost	\$ 7,012	\$3,836	\$2,586	\$5,088	\$3,375	\$4,378	_____
½ crop custom receipts	30	75	61	60	86	21	_____
NET CROP MACHINERY AND EQUIPMENT COST <u>2/</u>	\$ 6,982	\$3,761	\$2,525	\$5,028	\$3,289	\$4,357	_____
Net crop machinery and equipment cost per acre crops	31	38	36	37	35	34	_____
Crop machinery and equipment investment per acre crops	49	69	59	60	62	58	_____
<u>Livestock:</u>							
Machinery and equipment investment	\$ 5,263	\$3,419	\$2,108	\$3,782	\$3,097	\$3,740	_____
Interest on investment @ 5%	263	171	105	189	155	187	_____
Depreciation	1,054	611	330	685	496	821	_____
Gas, oil, and repairs	765	352	179	469	267	528	_____
Machine work hired	26	57	49	71	40	41	_____
Electricity	641	381	146	429	325	404	_____
Miscellaneous <u>1/</u>	158	103	63	113	93	112	_____
Gross livestock machinery and equipment cost	\$ 2,907	\$1,675	\$ 872	\$1,956	\$1,376	\$2,093	_____
½ livestock custom receipts	2	31	2	4	37	2	_____
NET LIVESTOCK MACHINERY AND EQUIPMENT COST <u>2/</u>	\$ 2,905	\$1,644	\$ 870	\$1,952	\$1,339	\$2,091	_____

Net livestock machinery and equipment cost per cow	37	39	36	38	33	46	_____
Livestock machinery and equipment investment per cow	67	81	88	73	77	83	_____
Total machinery gas, oil, and repair as % of total machinery investment	25	19	17	23	18	20	_____
Total machinery depreciation as % of total machinery investment	22	20	23	22	20	23	_____
Total gross machinery cost as % total gross receipts	20	20	23	18	20	25	_____

- 1/ Miscellaneous machinery expense includes housing, taxes, insurance, and farm labor used to service machinery. It is calculated on the basis of 3% of the average machinery investment.
- 2/ Gross machinery costs are reduced by $\frac{1}{2}$ of the custom work receipts to get a cost that may be fairly charged to the home farming operation.

The 23 large farms enjoyed machinery costs which were \$5 less per acre than the group of 29 small farms. Lower machinery costs per acre are expected in the large farm group because they farmed over 3 times as many acres of crops as the small farm group. The surprising fact is that large farms had machinery and equipment costs that were \$1 per cow more than the small farm group. The large farm group had over 3 times as many cows as the small farms.

The lower overhead (machinery and equipment investment per cow) on the high income farms resulted in costs per cow being \$8 lower than in the low income group.

LABOR COSTS
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
Operator's labor	\$ 2,252	\$2,411	\$2,193	\$2,600	\$2,264	\$2,100	_____
Hired labor	7,794	2,857	1,100	4,520	2,458	3,618	_____
Perquisites	1,457	434	213	708	393	750	_____
Unpaid family labor	823	514	440	460	506	785	_____
GROSS LABOR COST	\$12,326	\$6,216	\$3,946	\$8,288	\$5,621	\$7,253	_____
Gross labor cost per man equivalent	2,801	2,391	2,192	2,512	2,342	2,590	_____
Gross labor cost per hour labor	0.97	0.83	0.76	0.87	0.81	0.90	_____
Gross labor cost as % of total receipts	25	22	27	21	23	28	_____
Total PMWD <u>1/</u>	1,200	671	444	853	620	724	_____
% PMWD on crops	24	25	32	28	26	25	_____
% PMWD on livestock	75	73	64	71	71	73	_____
Net labor cost per PMWD	\$ 10.25	\$ 9.11	\$ 8.75	\$ 9.64	\$ 8.87	\$ 9.99	_____
PMWD per man	273	258	247	258	258	259	_____
<u>Crop labor:</u>							
Gross crop labor cost	\$ 3,081	\$1,640	\$1,302	\$2,390	\$1,516	\$1,945	_____
$\frac{1}{2}$ crop custom receipts	30	75	61	60	86	21	_____
Net crop labor cost <u>2/</u>	\$ 3,051	\$1,565	\$1,241	\$2,330	\$1,430	\$1,924	_____
Net crop labor cost per acre crops	14	16	18	17	15	15	_____
Acres crops per man	51	38	39	42	40	45	_____
<u>Livestock labor:</u>							
Gross livst. labor cost	\$ 9,245	\$4,576	\$2,644	\$5,898	\$4,105	\$5,308	_____
$\frac{1}{2}$ livst. custom receipts	2	31	2	4	37	2	_____
Net livst. labor cost <u>2/</u>	\$ 9,243	\$4,545	\$2,642	\$5,894	\$4,068	\$5,306	_____
Net livst. labor cost per cow	119	108	110	113	102	118	_____
Dairy cows per man	18	16	13	16	17	16	_____

- 1/ A productive man work day (PMWD) is the amount of productive work accomplished by an average farm worker in a 10-hour day. The total PMWD measures the amount of work required to care for all crop and livestock enterprises.
- 2/ Gross labor cost is reduced by $\frac{1}{2}$ of the custom work receipts to obtain a net cost which may be more fairly applied to the home farming operation.

CROP EFFICIENCY
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
Total acres crops <u>1/</u>	224	99	70	137	95	127	_____
Total acres pasture	161	113	73	122	104	116	_____
Total animal units <u>2/</u>	122	67	35	80	61	76	_____
Acres crops per animal unit	1.84	1.48	2.00	1.71	1.56	1.67	_____
Animal units pastured	109	58	32	70	53	68	_____
Acres pasture per A.U. pastured	1.48	1.95	2.28	1.74	1.96	1.71	_____
Acres pasture per acre crops	0.72	1.14	1.04	0.89	1.09	0.91	_____
Crop Index <u>3/</u>	134%	140%	118%	138%	133%	130%	_____
Fertilizer cost per acre crops	\$ 14	\$ 16	\$ 14	\$ 14	\$ 17	\$ 12	_____
Fertilizer cost per acre pasture	6	8	6	7	8	5	_____

1/ Acres of crops includes rented and double-crop acreage.

2/ An animal unit is a measure of the total livestock on the farm, measured in cow equivalents.

3/ Crop Index is a measure of all crop yields, based on the 5-year state average equal to 100.

Although the large and small farm groups averaged an equal amount of fertilizer used per acre crops and per acre pasture, the large farm group had a higher crop index and a lower average of pasture per animal unit.

The greater pasture efficiency (acres pasture per A.U. pastured) on the 23 large farms is in effect offset by their length of pasture season (82 days), which is 21 days shorter than the small farm group average.

LIVESTOCK EFFICIENCY
Grade-A Dairy

	Farm Size			Income Level			My Farm
	Large	Medium	Small	High	Medium	Low	
Pounds milk sold	794,287	426,724	208,230	566,681	369,904	427,142	
Value milk sold	\$ 41,944	\$ 22,492	\$ 10,967	\$ 31,122	\$ 19,302	\$ 21,235	
Average test milk sold	3.7	3.8	3.8	3.8	3.5	3.7	
Pounds milk sold per cow	10,183	10,160	8,676	10,898	9,248	9,492	
Pounds milk sold per man	180,520	164,125	115,683	171,722	154,127	152,551	
Value milk sold per man	\$ 9,533	\$ 8,651	\$ 6,093	\$ 9,431	\$ 8,043	\$ 7,584	
Value milk sold per cwt.	\$ 5.28	\$ 5.27	\$ 5.27	\$ 5.49	\$ 5.22	\$ 4.97	
% cow turnover ^{1/}	27	27	28	28	26	30	
No. heifers as % of no. cows	56	51	44	56	45	53	
<u>Feed Fed per Cow:</u>							
Grain, pounds	1,560	1,527	1,104	1,725	1,208	1,610	
Silage, tons	8.55	6.37	4.94	6.19	6.14	7.28	
Hay, tons	1.69	1.73	1.78	1.75	1.74	1.86	
Supplement, pounds	350	347	230	373	223	437	
Purchased mixed feed, pounds	1,224	1,700	1,526	1,191	1,724	2,091	
Pasture, days	82	120	103	115	114	107	
Other, pounds	120	12	0	80	0	16	
Total pounds TDN ^{2/}	8,555	8,443	7,164	8,188	7,958	9,173	
Pounds TDN per cwt. milk	84	83	83	75	86	97	

^{1/} The percent cow turnover is that fraction of the cow herd which was sold, butchered, or died during the year. A 25% cow turnover means that each cow averaged a 4-year life in the herd.

^{2/} Total pounds of TDN fed per cow was calculated by using 75% TDN for grain, 20% TDN for silage, 50% TDN for hay, 75% TDN for supplement, 70% TDN for purchased mixed feed, 13 lbs. per day for pasture, and 75% TDN for other feed.

The 52¢ price difference per cwt. of milk between the high income and low income group accounted for only \$2,221 of the \$10,985 difference between them in net farm income.

The difference between high and low income farms in TDN fed per cwt. of milk sold is important. Low milk conversion efficiency on low income farms (97 lbs. of TDN per 100 lbs. of milk sold) may be due to low-quality cows, low-quality feeds, overfeeding relative to inherited milk production ability, poor herd health, or poor herd management.

Summary of Manufacturing Milk Records

Size alone will not guarantee success on manufacturing milk farms. The low income group of manufacturing milk farms averaged \$3,141 greater total investment than the high income group. Keeping the total investment per cow as low as possible is just as important with manufacturing milk farms as with Grade-A farms. The high income manufacturing milk farms averaged \$384 lower overhead per cow compared with the low income group.

The low income group averaged \$326 expenses per cow, in comparison with only \$308 in the high income group. In spite of higher expenses per cow in the low income group, this group averaged \$108 lower receipts per cow.

Although machinery costs per acre of crops and per cow were not significantly different between the high income and low income groups, the percent of gross receipts spent for machinery costs was significantly different. The low income group spent 33¢ of each receipt dollar for machinery ownership and operation, as compared with 22¢ in the high income group.

Manufacturing milk farms are usually small and usually have trouble achieving efficient use of labor throughout the year. The high income group showed the best labor efficiency with 247 productive man work days per man and 14 cows per man. The average of all Grade-A dairy farms showed 261 productive man work units per man and 16 cows per man.

There was little difference in crop yields between the various groups of farms. There was a large difference, however, in acres of pasture and acres of pasture per animal unit between the high income and low income group. The data would seem to indicate understocking of pasture on the low income farms. Maximum use of available pasture on the low income farms (2.5 acres per A.U. pastured) would allow the number of animal units to increase to 50. An increase to 50 in total animal units on the low income farms would correspond to a herd size of about 28 cows.

Milk sold per cow was only 403 lbs. higher in the high income group as compared with the low income group. Milk sold per man was 24,941 lbs. higher in the income group; the result of 3 more cows per man.

Total digestible nutrients fed per cwt. of milk totaled 175 lbs. in the low income group. The high income group averaged 94 lbs. of TDN per cwt. If the low income group had fed its available cow feed supply at the same rate as the high income group (6,101 lbs. of TDN per cow), they could have fed 28 cows, rather than 16.

CAPITAL INVESTMENT AND SIZE MEASURES
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
<u>Dollars Invested in:</u>				
Machinery & equipment	\$ 3,333	\$ 3,214	\$ 3,482	_____
Buildings	3,776	3,198	4,498	_____
Land	14,259	13,596	15,089	_____
Dairy cattle	4,512	4,440	4,603	_____
Other cattle	935	892	988	_____
Feed, seed, supply	1,571	1,651	1,472	_____
TOTAL INVESTMENT <u>1/</u>	<u>\$28,386</u>	<u>\$26,991</u>	<u>\$30,132</u>	_____
<u>Percent of Investment:</u>				
Machinery & equipment	12	12	12	_____
Buildings	13	12	15	_____
Land	50	50	50	_____
Livestock	19	20	19	_____
Feed, seed, supply	6	6	5	_____
Number of cows <u>2/</u>	17	18	16	_____
Total invest. per cow	\$ 1,670	\$ 1,500	\$ 1,883	_____
Man equivalent <u>3/</u>	1.4	1.3	1.5	_____
Total invest. per man	\$20,276	\$20,762	\$20,088	_____

1/ The investment values given are the average of the beginning and ending inventories. Machinery, equipment, and building investments are given at the actual undepreciated book value. Land, cattle, and feed inventories are given at the current market value.

2/ Number of cows is calculated from the monthly reported herd size, including milking and dry cows.

3/ Man equivalent is calculated from the hours of operator, unpaid family, and hired labor used on the farm. One man equivalent equals 2,880 hours.

The high income group maintained 2 more cows, with a total investment which was \$3,141 lower. The \$383 lower overhead per cow contributes to the profitability of the high income farms. It is significant that the 18-farm average total investment per cow is only \$18 lower than the comparable figure for the 126 Grade-A farms.

RECEIPTS
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
Dairy products sold (gross)	\$3,558	\$3,787	\$3,271	_____
Dairy cattle (including inventory change)	797	880	693	_____
Beef cattle (including inventory change)	273	274	271	_____
Swine (including inventory change)	81	70	94	_____
Sheep (including inventory change)	114	52	192	_____
Poultry (including inventory change)	200	284	94	_____
Other livestock receipts	-4	-5	-2	_____
Crop sales	1,599	2,087	989	_____
Miscellaneous receipts	157	184	124	_____
Crops, feed, seed, supplies inventory increase	600	950	163	_____
TOTAL FARM RECEIPTS	<u>\$7,375</u>	<u>\$8,563</u>	<u>\$5,889</u>	_____
Receipts per dollar invested	\$ 0.26	\$ 0.32	\$ 0.20	_____

The high income group shows its superiority of capital use by 12¢ more in receipts per dollar invested.

The high income farms sold \$1,098 more in crops than the low income group. The major part of the crop receipts were tobacco sales.

EXPENSES
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
Hired labor	\$ 453	\$ 457	\$ 448	_____
Value unpaid family labor	309	315	301	_____
Purchased feed	1,013	973	1,063	_____
Fertilizer	441	481	391	_____
Lime	57	66	46	_____
Other crop expenses	175	173	178	_____
Supplies	29	23	36	_____
Machine hire	102	119	81	_____
Gas and oil	284	300	264	_____
Veterinary and medicine	36	38	33	_____
Breeding expenses	53	65	38	_____
Livestock expenses	67	54	83	_____
Milk marketing	373	420	315	_____
Taxes	142	139	146	_____
Miscellaneous expenses ^{1/}	331	381	268	_____
Real Estate decrease (including maint. & repair)	375	436	299	_____
Machinery decrease (including maint. & repair)	1,157	1,097	1,232	_____
Crops, feed, seed, supplies inventory decrease	0	0	0	_____
TOTAL FARM EXPENSES	\$5,397	\$5,537	\$5,222	_____

^{1/} Miscellaneous expenses include such items as rent (other than pasture), electricity, telephone, farm subscriptions, and other unclassified business expenses.

The \$315 greater expenses on the high income farms must be considered in light of \$2,674 higher receipts in this group.

PROFIT OR LOSS
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
Total receipts	\$ 7,375	\$ 8,563	\$ 5,889	_____
Total expenses	5,397	5,537	5,222	_____
NET FARM INCOME <u>1/</u>	\$ 1,978	\$ 3,026	\$ 667	_____
Average capital investment	28,386	26,991	30,132	_____
Interest @ 5%	1,419	1,350	1,507	_____
LABOR INCOME <u>2/</u>	559	1,736	-1,081	_____
Value farm products used in home	617	603	635	_____
LABOR EARNINGS <u>3/</u>	1,176	2,339	-446	_____
% return on investment <u>4/</u>	-1	2	-5	_____
Net return per hour operator's labor <u>5/</u>	\$ 0.20	\$ 0.60	\$ -0.42	_____

- 1/ Net farm income is the difference between total receipts and total expenses. No adjustment is made for size of the farm.
- 2/ Labor income is a measure of the actual return received by the farmer for his labor management after a charge of 5% interest on the total investment has been deducted from net farm income. Since the deduction for interest is more for larger farms, labor income is a better figure than net farm income to use in comparing farms of unequal size.
- 3/ Labor earnings are computed by adding to labor income those farm benefits (such as milk, meat, and garden produce) received by the farm family. The value of housing is not included in labor earnings because the value of the farm dwelling is not included in the capital investment.
- 4/ Return on investment is a somewhat different look at the profit picture than labor income. All labor (including the operator's labor computed at \$200 per month), is charged as an expense against the net farm income. The remaining income is considered return to investment, and when divided by total investment gives the return on investment.
- 5/ Net return per hour of operator's labor is calculated by dividing the labor income by the hours of operator's labor. A full-time operator is considered as working 2,880 hours per year.

MACHINERY AND EQUIPMENT COSTS
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
<u>Crops:</u>				
Machinery & equipment investment	\$2,568	\$2,318	\$2,880	_____
Interest on invest. @ 5%	128	116	144	_____
Depreciation	718	645	810	_____
Gas, oil, & repairs	499	547	440	_____
Machine work hired	104	126	76	_____
Electricity	11	18	3	_____
Miscellaneous <u>1/</u>	77	70	86	_____
Gross crop mach. & equip. cost	\$1,537	\$1,522	\$1,559	_____
$\frac{1}{2}$ crop custom receipts	17	23	9	_____
NET CROP MACH. & EQUIP. COST <u>2/</u>	\$1,520	\$1,499	\$1,550	_____
Net crop mach. & equip. cost per acre crops	39	39	39	_____
Crop mach. & equip. invest. per acre crops	66	61	72	_____
<u>Livestock:</u>				
Machinery & equipment investment	\$ 765	\$ 896	\$ 602	_____
Interest on invest. @ 5%	38	45	30	_____
Depreciation	134	100	178	_____
Gas, oil, & repairs	80	74	87	_____
Machine work hired	6	4	8	_____
Electricity	88	98	74	_____
Miscellaneous <u>1/</u>	23	27	18	_____
Gross livst. mach. & equip. cost	\$ 369	\$ 348	\$ 395	_____
$\frac{1}{2}$ livst. custom receipts	0	0	0	_____
NET LIVST. MACH. & EQUIP. COST <u>2/</u>	\$ 369	\$ 348	\$ 395	_____
Net livst. mach. & equip. cost per cow	22	19	25	_____
Livst. mach. & equip. invest. per cow	45	50	38	_____
Total mach. gas, oil, & repair as % of total mach. invest.	17	19	15	_____
Total mach. depreciation as % of total mach. invest.	26	23	28	_____
Total gross mach. cost as % of total gross receipts	26	22	33	_____

1/ Miscellaneous machinery expense includes housing, taxes, insurance and farm labor used to service machinery. It is calculated as 3% of the average machinery investment.

2/ Gross machinery costs are reduced by $\frac{1}{2}$ of the custom work receipts to get a cost that may be fairly charged to the home farming operation.

LABOR COSTS
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
Operator's labor	\$2,278	\$2,400	\$2,125	_____
Hired labor	447	454	440	_____
Perquisites	53	3	115	_____
Unpaid family labor	309	315	301	_____
GROSS LABOR COST	\$3,087	\$3,172	\$2,981	_____
Gross labor cost per man equivalent	2,205	2,440	1,987	_____
Gross labor cost per hour labor	0.77	0.85	0.69	_____
Gross labor cost as % of total receipts	42	37	51	_____
Total PMWD <u>1/</u>	307	316	296	_____
% PMWD on crops	32	34	29	_____
% PMWD on livestock	67	65	70	_____
Net labor cost per PMWD	\$ 10	\$ 10	\$ 10	_____
PMWD per man	219	243	197	_____
<u>Crop labor:</u>				
Gross crop labor cost	\$1,041	\$1,108	\$ 958	_____
$\frac{1}{2}$ crop custom receipts	17	23	9	_____
Net crop labor cost <u>2/</u>	\$1,024	\$1,085	\$ 949	_____
Net crop labor cost per acre crops	26	29	24	_____
Acres crops per man	28	29	27	_____
<u>Livestock labor:</u>				
Gross livst. labor cost	\$2,046	\$2,064	\$2,023	_____
$\frac{1}{2}$ livst. custom receipts	0	0	0	_____
Net livst. labor cost <u>2/</u>	\$2,046	\$2,064	\$2,023	_____
Net livst. labor cost per cow	120	115	126	_____
Dairy cows per man	12	14	11	_____

1/ A productive man work day (PMWD) is the amount of productive work accomplished by an average farm worker in a ten hour day. The total PMWD measures the amount of work required to care for all crop and livestock enterprises on the farm.

2/ Gross labor cost is reduced by $\frac{1}{2}$ of the custom work receipts to obtain a net cost which may be more fairly applied to the home farming operation.

Livestock labor costs per cow are higher in the low income group than in any group average for Grade-A dairy farms.

CROP EFFICIENCY
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
Total acres crops <u>1/</u>	39	38	40	_____
Total acres pasture	88	59	124	_____
Total animal units <u>2/</u>	28	28	29	_____
Acres crops per animal unit	1.39	1.36	1.38	_____
Animal units pastured	25	24	26	_____
Acres pasture per A.U. pastured	3.52	2.46	4.77	_____
Acres pasture per acre crops	2.26	1.55	3.10	_____
Crop Index <u>3/</u>	126	129	122	_____
Fertilizer cost per acre crops	\$ 10	\$ 11	\$ 9	_____
Fertilizer cost per acre pasture	\$ 1	\$ 1	\$ 0	_____

1/ Acres of crops includes rented and double-crop acreage.

2/ An animal unit is a measure of the total livestock on the farm, measured in cow equivalents.

3/ Crop Index is a measure of all crop yields, based on the 5-year state average equal to 100.

There is a sharp difference between the high and low income groups in acres of pasture per animal unit pastured and in acres of pasture. These data are correct and can only be explained on the basis of small sample size.

LIVESTOCK EFFICIENCY
Manufacturing Milk

	18 Farms	10 High Income Farms	8 Low Income Farms	My Farm
Pounds milk sold	108,229	116,865	97,433	_____
Value milk sold	\$ 3,558	\$ 3,787	\$ 3,271	_____
Value milk sold per hundredweight	3.29	3.24	3.36	_____
Average test milk sold	4.0	4.1	3.8	_____
Pounds milk sold per cow	6,366	6,493	6,090	_____
Pounds milk sold per man	77,306	89,896	64,955	_____
Value milk sold per man	\$ 2,541	\$ 2,913	\$ 2,181	_____
% cow turnover ^{1/}	14	16	12	_____
No. heifers as % of no. cows	33	25	43	_____
Feed Fed per Cow:				
Grain, pounds	992	1,165	761	_____
Silage, tons	3.23	3.03	3.49	_____
Hay, tons	3.54	1.58	6.16	_____
Supplement, pounds	120	211	0	_____
Purchased mixed feed, pounds	986	656	1,425	_____
Pasture, days	129	138	116	_____
Other, pounds	19	32	0	_____
Total TDN	8,047	6,101	10,632	_____
Pounds TDN per cwt. milk	126	94	175	_____

^{1/} The percent cow turnover is that fraction of the cow herd which was sold, butchered, or died during the year. A 25% cow turnover means that each cow averaged a 4-year life in the herd.

The larger number of cows per man in the high income group, coupled with 403 lbs. higher milk production, resulted in 24,941 lbs. more milk sold per man.

The high income farms have not benefited from a higher-than-average milk price. The average price received per hundredweight on high income farms is 12¢ lower than the average for low income farms.

The value of milk sold per man is not high enough for any of the groups to give a satisfactory labor return. If manufacturing milk producers are to enjoy labor returns comparable to Grade-A dairy farms, they must handle a larger number of cows per man with a much lower total investment per cow.

The heavy feed cost per cow and per cwt. of milk in the low income group is one of the most serious faults in this group of farms. A plus return over feed cost is impossible when 175 lbs. of TDN are fed per cwt. of milk sold at an average price of \$3.36.

This group of farms is not experiencing the type of feed-to-milk conversion that is expected for their level of production. Their inefficient conversion may be caused by poor production, poor herd health, or poor herd management.



ISSUED IN FURTHERANCE OF COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS, ACTS OF MAY 8 AND JUNE 30, 1914, IN COOPERATION WITH THE U. S. DEPARTMENT OF AGRICULTURE. W. H. DAUGHTREY, DIRECTOR, AGRICULTURAL EXTENSION SERVICE, VIRGINIA POLYTECHNIC INSTITUTE, BLACKSBURG, VIRGINIA.

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