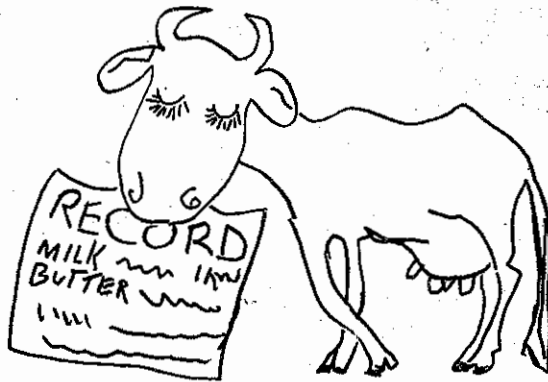


FROM



FARM ADVISOR'S OFFICE
 COUNTY ADOBE BUILDING
 MERCED, CALIFORNIA

MERCED COUNTY DAIRY
 221



1950

MANAGEMENT STUDY

Study Conducted By
 THE AGRICULTURAL EXTENSION SERVICE
 UNIVERSITY OF CALIFORNIA, COLLEGE OF AGRICULTURE
 AND
 UNITED STATES DEPARTMENT OF AGRICULTURE
 In Cooperation With
 Merced County Dairymen

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INTRODUCTIONS AND EXPLANATIONS

This report presents the Merced County Dairy Management Study comprising 6 records on market milk dairies and 5 on manufacturing milk dairies for the year ending February 28, 1951. This study was undertaken by the Agricultural Extension Service for the purpose of developing current local management and cost information that would be helpful to local dairymen in improving their profits. The dairies covered are probably above average in efficiency and being few in number the figures contained herein should not be considered as an average for the county. The study is not being continued in 1951.

The Dairy Enterprise. These records apply only to the dairy enterprise which is usually only part of the total farm business, being associated in most cases with some other enterprises, such as irrigated pasture, hay and sometimes silage, or even other commercial crops. Farm produced feed is charged to the dairy enterprise at local farm values along with purchased feed. The dairy enterprise consists of the production of milk and some raising of dairy cattle. Labor reported covers only the milking, feeding, and care of the entire dairy herd. Feed reported is for the entire herd, including bulls and young stock, as well as the cows.

Animal Unit. An animal unit is one mature head of dairy stock or the equivalent in feed requirement. Animal units per head are as follows: Cows, 1.00; bulls 1.00; calves under 3 months, .25; calves 3 months to one year, .40; heifers 1 to 2, .70; and heifers 2 to 3, .75. Animal units per cow vary from herd to herd with varying proportions of young stock, thus accounting for differences in quantities and costs of feed. Table 5 shows the animal units per cow in the herd.

Total Digestible Nutrients. The nutrient content of all feeds may be estimated and combined to show the relative cost and efficiency of the net usable nutrients provided for production and growth. Total digestible nutrients (TDN) is the energy value of the net usable portion of the feed. It is estimated as follows: hay, 50%; concentrates, 75%; silage and green feed, 8 to 18%; and pasture 400 pounds per animal unit month. An animal unit month of pasture is the quantity used by one mature head of cattle or the equivalent in feed requirement getting all of the roughage from pasture for one month. It is equivalent to .4 of a ton of hay in feeding value.

Net Stock Income. The amount by which the sale of cows, calves, and other dairy stock exceeds cost of dairy stock bought, adjusted by any increase or decrease in inventory value of stock, is called "Net Stock Income." Over the years where replacements are largely raised in the dairy enterprise, this amounts to about 10% of the total income.

Management Income. This is the amount by which total income exceeds total cost of production as figured in these records.

Farm Income is management income plus the value of the operator's own labor and computed interest on investment. It is the total amount the dairyman makes from his dairy enterprise for his management, labor, and invested capital.

Investment. The investment per cow shown in this report is for the dairy enterprise only. It includes only the land in lots and corrals, dairy buildings, dairy equipment, and feed and stock on hand. Buildings and equipment are included at half of the original cost since over their useful life they decline in value by depreciation from cost to zero. Dairy stock are valued in the stock inventory at uniform values per head at beginning and end of the year for stock of the same age and quality.

TABLE 1 - PROFIT DETERMINING FACTORS IN INDIVIDUAL DAIRY ENTERPRISES

Ser. No.	Size Of Herd *	% Fat in Milk	Average Price Received Per		Quantity Sold Per Cow		Net Stock Income	Miscell. Income	Milk Income	Total Income	Total Expense	Management Income	Farm Income
			Cwt. Milk	Lb. Fat	Cwt. Milk	Lbs. Fat							
Dollars per average cow for year													
Market Milk Dairies													
1	M	3.5	3.60	1.03	125	440	87.70	5.69	450.92	544.31	400.06	144.25	226.13
2	M	4.3	4.65	1.08	94	406	58.01	1.93	437.02	496.96	378.44	118.52	217.56
3	L	5.4	5.53	1.03	73	396	11.60	5.96	406.13	423.69	305.86	117.83	192.16
4	L	3.3	3.25	.97	107	357	72.89	8.06	346.76	427.71	402.65	25.06	98.15
5	S	3.9	3.36	.91	95	349	61.07	3.74	317.70	382.51	382.06	.45	136.18
6	M	5.1	5.02	.98	69	352	7.99	7.17	344.32	359.48	384.52	-25.04	88.90
Av. A.	47 Cows	4.1	4.18	1.01	93	384	47.80	5.79	387.32	440.91	371.43	69.48	157.93
Manufacturing Milk Dairies													
7	M	3.6	2.93	.83	111	393	67.85	6.80	324.50	399.15	374.58	24.57	70.24
8	S	4.6	3.89	.84	85	394	62.76	5.83	331.77	400.36	382.80	17.56	97.17
9	S	4.6	3.76	.82	79	362	66.24	5.31	296.97	368.52	353.28	15.24	140.95
10	M	5.1	4.14	.82	76	386	68.21	1.74	316.25	386.20	404.34	-18.14	67.92
11	S	4.9	3.96	.81	48	238	44.60	3.55	191.47	239.62	270.86	-31.24	75.36
Av. B.	26 Cows	4.4	3.66	.83	83	368	64.06	4.43	303.35	371.84	369.83	2.01	86.67

* Size of herd: S - Under 25 cows, M - 25-60 cows, L - Over 60 cows.

The 11 individual dairy records are listed above in 2 groups in order of management income per cow which appears in the next to the last column. The first group of 6 market milk dairies show a range in management income from \$144 a cow down to a loss of \$25 a cow. Notice that the first 3 in earnings sold more butter fat per cow, received better prices and had lower total expenses per cow than the lower 3 records. Production or sale per cow, price received, and total cost per cow are the main profit determining factors. Average "A" covering these 6 records shows 384 pounds of fat sold per cow at \$1.01 per pound and an average management income of \$69.48 per cow.

The 5 manufacturing milk records in the second group covered by Average B at the bottom of the table had an average sale of 368 pounds of fat per cow sold at \$.83 per pound and a management income of 2.01 per cow. Three of these dairies had a small management income and 2 had a loss. Average size of herd was 26 cows as compared to 47 for the market milk group.

TABLE 2 - PRODUCTION FACTORS AND COSTS PER CWT. OF MILK SOLD

Ser. No.	Lbs. of Milk Fat per Cow		% Sales of C.T. Record	% Time Cows Milking	Av. Freshenings Per Cow	% Fresh July Dec.	Lbs. Conc. Per Cow	Conc. Fed By Prod.	Lbs. TDN Cows Only	Dollars per Cwt. Milk Sold				
	Sold	DHIA Record								Total Cost	Inc. Not Milk	Net Cost Milk	Av. Price	Mgt. Income
Market Milk		Dairies												
1	440	461	95	86	1.1	80	2825	Yes	9119	3.20	.75	2.45	3.60	1.15
2	406	419	97	88	1.1	60	2914	Yes	8097	4.03	.64	3.39	4.65	1.26
3	396	400	99	85	-	-	2692	Yes	8569	4.17	.24	3.93	5.53	1.60
4	357	382	93	84	.6	53	2809	Yes	9529	3.78	.76	3.02	3.25	.23
5	349	394	89	78	.9	-	2713	Yes	7557	4.03	.68	3.35	3.36	.01
6	352	388	91	91	.9	63	2638	Yes	7407	5.60	.22	5.38	5.02	-.36
Av.	384	404	95	86			2774		8808	4.01	.58	3.43	4.18	.75
Manufacturing Milk		Dairies												
7	393	410	96	85	1.0	34	2304	Yes	9447	3.39	.68	2.71	2.93	.22
8	394	419	94	91	1.3	60	3646	Yes	9016	4.48	.80	3.68	3.89	.21
9	362	376	96	85	-	-	2315	Yes	5685	4.47	.90	3.57	3.76	.19
10	386	466	83	88	1.1	62	1593	Yes	7927	5.30	.92	4.38	4.14	-.24
11	238	-	-	64	-	-	698	No	4687	5.60	1.00	4.60	3.96	-.64
Av.	368			85	-	-	2147		8113	4.46	.82	3.64	3.66	.02

Since pounds of milk or fat sold per cow is one of the main profit factors, we show above some of the factors relating to production along with cost and net income per cwt. of milk. Actual sales include milk used in the home but not that fed to calves. Sales are usually a little lower than the estimated total annual production as figured from samples once a month averaging 95% for the market milk group. Cows in the herd were milking 86% of the time in the market milk group and 85% in the manufacturing milk group. The concentrates fed per cow include all concentrates used so include a little fed to calves. The market milk group generally fed a little more concentrates. All dairies fed according to production except No. 11 which had no production record and a very low production per cow for this time and area.

The total digestible nutrients for the cows only shown above is estimated from the feeds reported by deducting that probably consumed by the bulls, calves and heifers in the herd. Notice that the market milk group used less on the average despite higher production than did the other group.

TABLE 3 - COST FACTORS AND COSTS PER COW IN INDIVIDUAL DAIRIES

Ser. No.	Total Hours Labor p/Cow	Av. Price Labor Per Hr.	Investment Per Cow	Cost in Dollars per Average Cow							Acres Ir.past. per cow	Total lbs. TDN p/cow	Cost Per Cwt. TDN
				Total Feed Cost	Hired Labor	Operator's Labor	Miscell.	Depreciation	Int. On Investment	Total All Costs			
Market Milk Dairies													
1	69	1.00	514.65	254.86	12.57	56.15	41.47	9.28	25.73	400.06	1.0	11519	2.21
2	74	1.00	500.28	248.67	-	74.03	21.03	9.70	25.01	378.44	-	9777	3.07
3	69	1.00	327.45	202.28	10.86	57.96	11.91	6.48	16.37	305.86	.8	8665	2.33
4	82	.86	747.07	256.84	34.32	35.73	28.89	9.51	37.36	402.65	.9	10921	2.35
5	110	1.00	519.66	204.59	-	109.75	28.11	13.63	25.98	382.06	-	10437	1.96
6	93	1.00	417.59	238.15	-	93.06	19.66	12.77	20.88	384.52	-	9327	2.55
Av.	79	.96	517.45	236.66	13.25	62.58	23.58	9.49	25.87	371.43	.6	9968	2.37
Manufacturing Milk Dairies													
7	73	1.00	449.48	259.76	50.03	23.20	15.55	3.57	22.47	374.58	-	11847	2.19
8	61	1.00	387.19	285.06	.42	60.25	11.23	6.48	19.36	382.80	-	11128	2.56
9	104	1.00	448.27	200.54	.80	103.30	19.98	6.25	22.41	353.28	-	8805	2.28
10	124	.90	484.03	235.85	49.59	61.86	27.64	5.20	24.20	404.34	.3	10327	2.28
11	85	1.00	429.41	139.34	-	85.13	16.62	8.30	21.47	270.86	.3	6511	2.14
Av.	93	.96	446.18	233.34	26.87	62.35	19.36	5.60	22.31	369.83	-	10033	2.32

Costs, an important profit determining factor, are shown by group above along with certain other factors that contribute to costs. The investment, interest on investment, and depreciation per cow average higher for the market milk group although the lowest investment per cow for any dairy was in that group. Feed cost, the largest item, is shown in more detail in the next table. It was very little higher for the market milk group.

The acres of irrigated pasture per cow is only the usual permanent pasture and does not include sudan grass and alfalfa. The total pounds of total digestible nutrients (TDN) in the next to the last column is computed from the hay, concentrates, silage and pasturage reported and includes that for all stock in the herd. The greater the proportion of pasture which is the cheapest feed the lower will be the cost per 100 lbs. of TDN. Notice this figure in the last column varies from a low of \$1.96 to a high of \$3.07. Hay at \$20 a ton contains 50% TDN so has a TDN cost of \$2 per 100 lbs. Pasture at \$6 an animal unit month containing 400 lbs. of TDN has a cost of \$1.50 per 100 lbs.

TABLE 4 - FEEDS USED, FOOD PRICES AND FOOD COSTS PER COW

Ser. No.	Quantities Per Cow				Feed Prices in Dollars				Hay	Concentrates	Silage Green Feed	Pasture	Total Feed
	Hay Lbs.	Conc. Lbs.	Silage Greens Lbs.	Pasture Av. Mo.	Hay, Ton	Conc. Cwt.	Silage, Ton	Pasture Av. Mo.					
Market Milk Dairies													
1	12400	2825	-	8.0	17.60	3.46	-	6.00	108.86	97.61	-	48.39	254.86
2	11464	2914	3661	3.0	21.60	3.22	7.00	6.00	124.13	93.73	12.81	18.00	248.67
3	6154	2692	6938	5.8	18.20	3.24	7.00	6.00	55.90	87.44	24.28	34.66	202.28
4	8300	2809	10355	7.0	21.70	2.98	8.00	6.00	89.92	83.62	41.42	41.88	256.84
5	10854	2713	7317	5.0	16.80	2.16	6.67	6.00	91.33	58.83	24.39	30.04	204.59
6	9512	2638	1954	5.6	20.08	3.48	8.00	6.00	95.51	101.00	7.81	33.83	238.15
Av.	9166	2774	5789	5.8	19.91	3.21	7.50	6.00	91.25	88.95	21.72	34.74	236.66
Manufacturing Milk Dairies													
7	18959	2304	-	1.6	18.56	3.09	-	6.00	179.11	71.12	-	9.53	259.76
8	8138	3646	12971	5.0	21.42	3.19	8.00	6.00	87.15	116.16	51.88	29.87	285.06
9	8340	2315	5660	4.7	17.58	3.30	8.00	6.00	73.27	76.33	22.64	28.30	200.54
10	9727	1593	11940	5.3	20.20	3.64	8.00	6.00	98.34	58.08	47.76	31.67	235.85
11	9333	698	800	3.0	20.50	3.14	10.00	6.00	95.67	21.91	4.00	17.76	139.34
Av.	11236	2147	7125	4.0	19.58	3.29	8.03	6.00	110.02	70.54	28.59	24.19	233.34

Feed is the largest item of cost in the dairy enterprise and hence offers the dairyman his greatest opportunity for economy or extravagance. Hay use was high in all of these herds except No. 3, there not being enough pasturage available for most economical forage cost per cow. Concentrate use was about normal in these dairies but was probably a little more than may have been necessary in No. 8. Silage or green feed was used considerably in several of these dairies. It is justified, where economically produced, as a succulent feed during part of the year when pasturage is not available but being harvested and hand fed will practically always be a more costly feed than pasture and usually a little more than hay in cost of 100 lbs. of T.M.

A dairy herd in which replacements are raised can well utilize 11 or 12 animal unit months of pasturage per average cow in herd. This means about 1 acre per cow for lowest feed cost. And this acre of pasture should be well managed and grazed in rotation to provide an abundance of beneficial forage for the entire herd thus reducing feed costs and labor.

TABLE 5 - FACTORS INFLUENCING NET STOCK INCOME IN INDIVIDUAL HERDS

Ser. No.	Percent of Average Number of Cows				Average Price Per Head Sold		Animal Units Per Cow	Head Raised Per Cow	% Cows Pure-bred	Cows Sold	Other Stock Sold	Stock Inven. Incr.	Stock Bought	Net Stock Income				
	Sold	Died	Add-ed	Incr. or -Decr.	Cows	Other									Dollars Per Average Cow			
Market Milk Dairies																		
1	3.1	-	30.8	27.7	184.56	19.32	1.46	.74	6	5.68	8.32	108.46	34.76	87.70				
2	11.6	-	34.7	25.1	153.90	21.31	1.35	1.02	0	17.79	13.96	79.00	52.74	58.01				
3	21.1	-	33.2	12.1	168.14	12.50	1.02	.91	12	35.51	11.31	30.17	65.39	11.60				
4	15.8	1.3	14.5	-2.6	253.97	70.25	1.29	.54	7	40.15	18.51	14.23	-	72.89				
5	54.9	6.1	24.4	36.6	192.74	36.40	1.60	.92	0	105.77	11.10	-28.97	26.83	61.07				
6	20.6	2.6	12.9	-10.3	144.59	24.02	1.40	.36	0	29.74	3.70	-21.59	3.86	7.99				
Av.	17.7	.7	24.8	6.4	188.02	25.00	1.29	.73	5	33.35	12.33	33.31	31.19	47.80				
Manufacturing Milk Dairies																		
7	6.9	-	10.3	3.4	264.33	33.98	1.50	.79	9	18.17	22.19	39.52	12.03	67.85				
8	12.5	-	46.0	33.5	220.00	15.83	1.44	.80	0	27.61	11.92	105.23	32.00	62.76				
9	18.9	-	23.6	4.7	183.19	54.26	1.65	1.04	17	34.57	25.60	49.76	43.69	66.24				
10	19.9	-	22.4	2.5	149.26	46.53	1.46	.82	0	29.70	32.41	12.31	6.21	68.21				
11	13.3	-	6.7	-6.6	176.17	68.32	1.38	.87	0	23.49	22.77	11.67	13.33	44.60				
Av.	14.7	-	22.4	7.7	182.52	38.97	1.48	.85	5	26.80	24.10	41.65	28.49	64.06				

Net stock income although not an important factor in determining profit does ordinarily contribute a little additional income from stock raising in the dairy enterprise. The handling of replacements whether raised or purchased and the prices received per head sold influence the size of the net stock income. Net stock income really represents the gross value of the stock produced over and above the usual decline in value of cows before being sold as culls. Its computation is shown above in the last 4 columns. Under current prices and in herds where replacements are raised there should be a net stock income of around \$50 to \$60 per cow. This is about one-sixth to one-seventh of the income from milk so about 11% of the income from the market milk herds and 17% of that in the above manufacturing milk herds was from dairy stock this last year. Dairy stock production is an important sideline in milk production and one that can contribute considerably toward meeting costs. Selling surplus stock well and keeping death losses to a minimum will maximize this additional income.