

I N T R O D U C T I O N

This is the first annual report of the current Humboldt County Dairy Management Study. A similar study was conducted here for four years, 1929-32 inclusive. Record averages for these two periods appear in table 6. The 18 individual records are shown by numbers in order of management income per cow in tables 1 to 5. The record year covers the 12-month period from March 1, 1949 through February 28, 1950. All herds are largely of the high fat-test, lighter-weight breeds, Jerseys and Guernseys.

PURPOSE

The purpose of this study is to develop and present detailed production and cost information for the purpose of helping cooperating and other local dairymen in their individual management problems. The greatest value will come from the study and comparison of the detailed figures for individual dairies. The averages for all records are not presented as being average for the county. They apply only to these 18 dairies, which may be better than the average of all dairies in the county.

DAIRY ENTERPRISE A PART OF TOTAL FARM BUSINESS

In order to understand the information in this report, it is necessary to think of the dairy enterprise as a separate part of the entire farm business, which includes feed production and sometimes other crops and livestock. These dairy enterprise records are carried as though the feeding, care and milking of the dairy herd was a separate business from feed production, the growing of pasturage, hay, root crops, and green feed. Costs of growing these feed crops do not appear as such, but the farm-grown feeds are charged to the dairy enterprise at the local farm value. Purchased feeds are charged at cost. The labor shown is for the dairy enterprise only, as is the investment. There may be additional profits or losses from feed and other enterprises in addition to those shown for the dairy enterprise.

RENT

Several of these dairy farms are rented and the total rent paid covers the dwelling and all the land - most of which was devoted to feed production. So, with all feed grown charged to the dairy at its local price or value, we charged only that part of the rent to the dairy enterprise which would be needed to cover the buildings, lots, and corrals, and such rent was spread over miscellaneous costs, depreciation, and interest on investment just as in the case of owners. Hence, all cost figures shown in detail are comparable and as if the farm were owned by the operator. The renters own farm income figures, however, include only the interest on his own investment.

EXPLANATION OF TERMS

Average number of cows is computed by dividing total cow months by 12. Cows in the herd, both dry and milking, on the first of each month are counted for that entire month. As soon as a heifer has her first calf she is counted as a cow.

An animal unit is a mature head equivalent in feed requirement, and its use enables comparison of herds having varying proportions of dairy stock other than cows. Cows and bulls are one animal unit each, calves under 3 months are considered 0.25 animal units: calves 3 months to a year, 0.40; heifers 1 to 2 years, 0.70; and heifers over 2 years are .75 animal units per head. The average animal units in the herd are the average for the year of all stock in the herd as computed on the above basis. The animal units per cow are used to show the proportion of stock other than cows.

Total Digestible Nutrients (TDN) is that portion of the food used which is digested and used by the animal for maintenance, growth, and production. The amount of TDN in the various feeds used in this study are as follows: Hay-50% grain and concentrates-75%, roots and greens-13%, and pasture - 400 pounds per animal month.

Animal Unit Month is the amount of feed required by a mature head of cattle or its equivalent in young stock. In feed value it is equivalent to .4 of a ton of hay.

Milk Income is the income from milk sold plus the value of milk used in the home.

Net Stock Income is the difference between stock sales plus closing stock inventory, and the stock purchases plus the opening inventory of dairy stock. Stock is inventoried at a uniform value per head for stock of the same age and quality at both the beginning and the end of the record year.

Total Income is composed of the net stock income, income from manure and miscellaneous items, and the income from milk sold.

Feed Costs are composed of the cost of purchased feeds and the value of farm produced feeds. The latter are charged to the dairy at farm value which is about what such feeds would bring at the time put up, or market value less marketing cost. Unused feeds remaining at the end of the year are inventoried at the same value at which originally charged to the dairy. Pasture is charged at the going rental value per acre or per head month. Most natural pasture was charged at \$4 per animal unit month and irrigated pasture at \$5.

Total Expense is composed of the following items: All expenditures for feed, labor, supplies, and miscellaneous items; the value of farm produced feeds; the value of labor provided by the operator and his family; depreciation on buildings and equipment; and interest on the dairy enterprise investment at 5%.

Management Income is the difference between total income and total expense. If expense is larger, the loss is indicated by a minus sign (-). It is the amount by which income exceeds all costs of production except an allowance for management, and hence, is the residual available to reimburse management.

Labor Income is the management income plus the value of the operator's and family labor. It is the amount the dairyman receives for his dairy enterprise for labor and management, and is sometimes called labor and management income.

Farm Income is the labor income plus interest on investment. It is the total amount the dairyman receives from his enterprise for labor, management, and invested capital. From this total amount must come interest and principal payments on borrowed capital, since they are not obtained in these records it being assumed that interest on investment would cover interest on borrowed as well as the operator's own capital.

TABLE 3 -- COST FACTORS AND COSTS PER COW

RANK NO.	TOTAL ACRES PER COW	ACRES PASTURE PER COW	YIELD A.U. MO. PASTURE PER ACRE	HOURS LABOR PER COW	RATE HOUR HIRED LABOR	DAIRY INVEST. PER COW	TOTAL FEED	HIRED LABOR	OPER. LABOR	MISC. COSTS	DEPREC- IATION	INT. ON INVEST.	TOTAL COST
	Costs In Dollars Per Cow												
1	1.7	1.6	6.8*	70	—	\$441	229.45	—	56.16	20.87	5.03	22.06	333.57
2	3.1	1.7	6.7*	58	1.00	337	152.94	31.32	27.03	18.22	3.53	16.82	249.86
3	1.2	1.2	9.8*	66	1.00	284	215.52	26.86	38.80	20.78	6.21	14.21	322.38
4	1.5	1.3	7.4*	56	—	384	187.70	—	44.53	18.72	7.33	20.75	279.03
5	1.3	1.2	6.9	72	1.00	336	108.56	42.82	22.97	19.11	3.84	16.77	214.07
6	1.3	1.2	9.9*	59	.80	439	156.92	23.04	24.04	14.38	7.58	21.96	247.92
7	1.5	1.3	8.1*	72	—	301	202.31	—	56.64	26.28	4.16	15.07	304.46
8	2.4	2.1	4.4	57	.80	371	132.73	25.28	20.22	13.47	4.29	18.55	214.54
9	1.9	1.3	7.4	50	—	352	187.20	—	39.86	19.15	5.67	17.61	269.49
10	2.6	2.4	4.8	51	—	275	119.85	—	40.65	18.90	3.07	13.73	196.20
11	1.4	1.1	6.9	84	—	434	214.77	—	67.07	45.38	3.00	21.68	351.90
12	1.9	1.5	6.5	51	.80	333	201.01	20.91	20.91	21.66	6.01	16.64	287.14
13	2.0	1.8	5.0	55	.80	331	167.68	20.26	23.53	21.27	6.01	16.53	255.28
14	1.7	1.5	5.3	71	—	312	193.34	—	57.14	29.17	4.36	15.58	299.59
15	1.6	1.3	5.6	69	1.00	292	135.70	51.84	16.93	20.20	5.40	14.60	244.67
16	2.6	1.6	4.4	84	—	424	170.63	—	67.13	28.40	7.58	21.21	294.95
17	1.5	1.1	7.1	62	—	311	206.08	—	49.28	12.05	4.46	15.58	287.45
18	.7	.5	24.0*	149	—	1094	410.37	12.07	107.32	59.40	16.46	54.69	660.31
Hi 9	1.8	1.5	6.8	61	.90	367	166.55	19.04	33.01	17.88	5.33	18.50	260.31
Lo 9	1.9	1.5	5.5	66	.92	346	173.04	19.17	36.81	23.56	5.60	17.29	275.47
Av. all	1.8	1.5	6.1	63	.91	357	169.78	19.10	34.90	20.70	5.46	17.90	267.84

*Asterisk denotes pasture received some irrigation.

Costs are as important as any other factor in determining profit. Notice the wide range in total cost per cow, from \$196 in No. 10 to \$660. in No. 18. Feed is the most important and largest cost item, so is shown in more detail in Table 4. Pasture is the cheapest feed, so we show above the total acres per cow in the farm and acres of pasture and the production of pasturage in animal unit months per acre. Most of these pastures furnished hay in addition. The dairy investment shown is for the dairy enterprise only, not including feed or pasture land.

TABLE 2 -- PRODUCTION FACTORS AND PRICE AND COSTS PER POUND OF BUTTERFAT

RANK IN MGT. INC.	POUNDS OF BUTTERFAT PER COW		PERCENT SOLD OF	PERCENT TIME	FRESHEN- INGS PER	PERCENT FRESHEN	LBS. CONC.	LBS. TDN	TOTAL	LESS	NET	AVG.	MGT.
	SOLD	D.H.I.A. RECORD	C.T. RECORD	COWS MILKING	COW	JULY - DEG.	PER COW	COW ONLY	COST	INCOME NOT FAT	COST	PRICE	INCOME
									Cents Per Lb. Butterfat Sold				
1	483	--	--	91.4	.95	9.1	2097	7776	69.0	20.4	48.6	79.8	31.2
2	456	485	94	82.3	1.01	5.1	1792	6337	54.8	1.8	53.0	77.2	24.2
3	482	524	92	89.3	.93	.0	2197	7247	66.9	9.1	57.8	76.2	18.4
4	467	489	96	92.1	.22	.0	1553	7260	59.7	2.3	57.4	76.3	18.9
5	349	--	--	83.5	1.03	2.4	1078	5512	61.3	6.4	54.9	77.2	22.3
6	378	420	90	88.9	.87	.0	1382	6229	65.5	8.5	57.0	77.0	20.0
7	438	469	93	87.8	1.06	.0	1419	7816	69.5	7.6	61.9	79.0	17.1
8	291	328	88	86.2	.91	.0	1092	6190	73.8	20.3	53.5	78.4	24.9
9	405	446	91	87.7	.80	.0	1851	7576	66.5	6.2	60.3	77.9	17.6
10	316	331	96	77.7	.99	.0	194	6000	62.1	6.5	55.6	77.3	21.7
11	425	488	87	86.0	1.32	4.5	2102	7033	82.8	15.2	67.6	83.2	15.6
12	406	435	93	84.8	8.89	2.0	2214	7243	70.7	7.4	63.3	76.6	13.3
13	326	336	97	82.3	.92	.0	1238	6175	78.4	15.0	63.4	77.6	14.2
14	369	412	90	85.8	.49	.0	2079	6669	81.2	12.5	68.7	79.0	10.3
15	278	308	90	73.7	1.05	13.2	1567	5120	88.1	19.0	69.1	77.6	8.5
16	354	396	89	84.3	1.03	4.6	1486	6565	83.3	12.6	70.7	77.3	6.6
17	339	--	--	76.4	1.12	13.3	1455	7595	84.8	3.9	80.9	76.0	-4.9
18	516	609	85	94.9	.61	40.0	6195	9229	127.9	37.9	90.0	76.7	-13.3
Hi 9	339	--	--	87.4	.87	.9	1566	6784	65.3	9.5	55.8	77.6	21.8
Lo 9	342	--	--	80.7	.96	6.6	1620	6516	80.4	13.0	67.4	77.6	10.2
Av. all	371	--	--	84.1	.89	4.0	1593	6600	72.2	11.1	61.1	77.6	16.5

Dairymen usually sell a little less butterfat than estimated total production from the Dairy Herd Improvement Association. Shown also above, are the percent of time cows in the herd were milking and the number of freshenings per average cow for the year and the percent of these freshenings in the last half of the year. The pounds of concentrates per cow is the total and may include some fed to calves and other stock. The pounds of TDN per cow only is the estimated total from all feeds reduced for the feed probably consumed by the reported number of bulls and young stock. The last 5 columns show costs, price, and management income per pound of fat. Higher production per cows results in lower cost per pound.

TABLE 4 -- FEEDS USED, FEED PRICES AND FEED COSTS PER COW IN DETAIL

RANK NO.	QUANTITY PER COW			FEED PRICES IN DOLLARS					HAY	CONCEN TRATES	GREEN FEED, ROOTS	PASTURE	TOTAL FEED COST	TOTAL LBS. TDN PER COW	COST PER CWT. TDN
	TONS			PASTURE A. U. MONTH	HAY PER TON	CONC. PER CWT.	GREEN ROOTS PER T.	PASTURE PER A. U. MONTH							
	HAY	CONC.	GR. ROOTS												
1	3.9	1.05	.0	11.1	24.20	3.74	—	5.05	95.00	78.44	—	56.01	229.45	9936	2.31
2	1.7	.90	.1	12.2	25.00	3.01	4.00	4.54	42.64	54.25	.51	55.54	152.94	7969	1.92
3	2.4	1.09	.6	10.8	29.70	4.05	5.00	4.90	70.05	89.22	3.28	52.97	215.52	8497	2.54
4	2.6	.77	3.1	10.3	27.10	3.41	4.50	4.91	69.97	53.04	14.15	50.54	187.70	8514	2.20
5	2.6	.53	—	8.6	16.55	3.28	—	3.50	43.09	35.44	—	30.03	108.56	6856	1.58
6	2.3	.69	—	12.5	22.54	3.17	—	4.91	51.92	43.82	—	61.18	156.92	8341	1.88
7	1.3	.95	9.1	11.2	23.40	3.72	5.00	5.00	30.69	70.49	45.35	55.78	202.31	9208	2.20
8	2.0	.54	5.0	9.2	21.40	3.22	3.96	4.00	43.03	35.15	17.80	36.75	132.73	7585	1.75
9	1.7	.93	6.5	10.0	25.00	4.11	4.00	4.15	43.58	76.16	26.15	41.31	187.20	8632	2.17
10	2.9	.09	—	11.5	23.54	2.67	—	4.00	68.67	5.18	—	46.00	119.85	7680	1.56
11	2.9	1.05	5.1	8.7	29.60	3.49	5.00	4.03	80.82	73.30	25.45	35.20	214.77	9001	2.39
12	2.6	1.11	2.4	10.7	29.08	3.19	5.00	3.86	77.00	70.73	11.93	41.35	201.01	9259	2.17
13	2.0	.62	4.7	9.3	28.80	3.65	3.90	4.94	58.21	45.21	18.17	46.09	167.68	7775	2.16
14	2.5	1.04	4.0	8.4	25.28	3.37	6.45	4.00	63.41	70.06	26.06	33.81	193.34	8397	2.30
15	2.4	.78	2.5	6.0	20.70	3.22	6.00	3.46	49.37	50.51	15.14	20.68	135.70	6464	2.10
16	2.4	.74	4.0	9.3	26.75	3.61	4.11	4.00	63.49	53.70	16.39	37.05	170.63	8005	2.13
17	1.9	.73	11.3	10.3	29.30	3.31	5.59	3.88	54.67	48.15	63.25	40.01	206.08	9563	2.16
18	2.5	2.32	—	14.9	37.31	4.00	—	4.59	93.68	247.79	—	68.90	410.37	13117	3.13
Hi 9	2.3	.73	2.5	10.6	23.37	3.53	4.29	4.52	52.83	55.30	10.62	47.80	166.55	8320	2.00
Lo 9	2.4	.81	3.6	9.1	26.04	3.41	5.08	4.06	62.74	55.22	18.20	36.88	173.04	8196	2.11
Av. all	2.3	.79	3.0	9.8	24.74	3.47	4.75	4.31	57.75	55.26	14.39	42.38	169.78	8236	2.06

To a certain extent, one type of feed can be substituted for another with considerable affect on feed costs per cow and per 100 lbs. of total digestible nutrients as shown in the last column. The total lbs. of TDN per cow is computed according to average analysis of the feeds reported and the figure above in the next to the last column includes feed for the young stock and bulls. Conservative use of the more expensive feeds such as hay, green feed and concentrates and maximum use of pasture makes for lowest feed cost. Wise procuring or buying of hay and concentrates can also save money. Notice the wide range in feed quantity, prices and costs.

TABLE 5 -- FACTORS INFLUENCING NET STOCK INCOME

RANK NO.	PERCENT OF AVERAGE NUMBER OF COWS				AV. PRICE PER HEAD SOLD		ANIMAL UNITS PER COW	HEAD RAISED PER COW	PERCENT COWS PURE-BRED	COWS SOLD	OTHER STOCK SOLD	INCR. OR DECR. INVEN.	STOCK BOUGHT	NET STOCK INCOME
	SOLD	DIED	ADDED	INCR. OR DECR.	COWS	OTHER STOCK								
1	9.6	.0	19.2	9.6	\$117	\$ 46	1.45	1.41	65	11.22	41.60	42.15	--	\$ 94.97
2	18.1	2.6	5.2	-15.5	97	101	1.34	.15	0	17.57	10.40	-21.32	--	6.65
3	74.6	.0	6.0	-68.6	200	26	1.26	.93	0	149.25	26.08	-138.36	--	36.97
4	9.4	3.2	15.8	3.2	122	19	1.26	.57	0	11.48	12.20	13.99	29.40	8.27
5	31.1	2.4	38.3	4.8	114	70	1.28	.17	0	35.49	6.70	7.41	27.68	21.92
6	15.0	1.7	16.7	.0	125	182	1.44	.22	9	18.78	3.05	12.10	3.34	30.59
7	84.1	.0	84.1	.0	99	15	1.29	1.33	9	83.43	13.66	-.66	66.15	30.28
8	9.8	2.8	73.0	60.4	77	9	1.29	.83	0	7.58	4.87	47.12	4.21	55.36
9	16.9	.0	12.1	-4.8	127	22	1.22	.39	0	21.55	5.91	-3.39	--	24.07
10	13.0	.0	5.2	-7.8	110	118	1.35	.13	0	14.32	24.61	-19.79	--	19.14
11	.0	.0	6.0	6.0	--	63	1.41	.60	85	--	7.54	55.09	--	62.63
12	15.7	3.5	31.4	12.2	76	138	1.42	.19	0	11.92	7.22	8.71	--	27.85
13	19.6	.0	21.2	1.6	96	--	1.33	.38	0	18.74	--	30.56	2.21	47.09
14	17.4	3.5	10.5	-10.4	99	63	1.36	.14	42	17.25	4.36	22.47	--	44.08
15	9.2	.0	18.4	9.2	115	8	1.27	.82	13	10.64	5.57	35.92	--	52.13
16	23.3	.0	25.6	2.3	93	82	1.30	.30	18	21.68	1.92	20.16	1.04	42.72
17	3.7	.0	18.6	14.9	100	45	1.41	.49	4	3.73	32.09	-23.28	--	12.54
18	24.4	.0	36.6	12.2	125	212	1.80	.61	100	30.49	389.02	-231.71	--	187.80
Hi 9	25.0	1.6	31.4	4.8	132	27	1.32	.60	--	33.12	11.62	1.44	10.99	35.19
Lo 9	14.2	.8	19.6	4.6	98	58	1.35	.42	--	13.84	16.96	12.62	.49	42.93
Av. all	19.6	1.2	25.5	4.7	120	40	1.34	.51	--	23.54	14.28	6.99	5.77	39.04

Net stock is the amount by which the stock raised exceeds the stock bought. Its calculation is shown in the last 5 columns. It is not a profit figure, but really represents the gross income from stock production which in dairying makes up about a tenth of the income; the other 9 tenths being from milk. But net stock income varies widely, from herd to herd, with different quantities of stock being raised and differences in death losses and selling prices. High net stock incomes usually are associated with higher profits so attention can well be paid to wise raising and good selling of dairy stock.

TABLE 6 -- COMPARISON OF DAIRY MANAGEMENT STUDY AVERAGES

MANUFACTURING MILK

	Humboldt County		Madera - Fresno	
	Mfg. Milk		Mfg. Milk	Mkt. Milk
	1929-32	1949		
Number of records	9	18	6	18
Av. no cows per dairy	36	41	19	72
Animal units per cow	1.2	1.3	1.6	1.6
Pounds of butterfat sold per cow	335	371	327	406
Av. price per lb. milk fat sold	\$ 0.37	\$ 0.78	\$ 0.79	\$ 1.09
Net cost of production per pound	<u>.36</u>	<u>.61</u>	<u>.72</u>	<u>.83</u>
Management income per pound	.01	.17	.07	.26
Hours of labor per cow	78.6	63.3	100.1	83.3
Tons of hay per cow	2.0	2.3	3.3	5.7
Tons of concentrates per cow	.5	.6	1.1	1.4
Tons of silage, green feed and roots	10.0	3.0	1.5	2.9
Animal unit months of pasture per cow	7.3	9.8	10.3	7.8
Income Per Cow				
Net stock income	9.89	39.04	85.11	79.35
Miscellaneous income - manure and sacks	2.57	2.18	3.72	3.33
Income from milk sold	<u>124.78</u>	<u>287.68</u>	<u>257.57</u>	<u>442.62</u>
Total income per cow	137.24	328.90	346.40	525.30
Costs Per Cow				
Hay cost per cow	26.00	57.75	69.07	122.03
Concentrates	17.12	55.26	64.31	87.82
Green feed, silage, roots, etc.	28.31	14.39	8.93	20.96
Pasture	<u>14.10</u>	<u>42.38</u>	<u>49.23</u>	<u>41.43</u>
Total feed cost per cow	85.53	169.78	191.54	272.24
Hired Labor	4.10	19.10	4.96	47.04
Operators and family labor	20.54	34.90	77.04	34.03
Miscellaneous costs	5.73	20.70	16.49	32.73
Depreciation, buildings and equipment	5.40	5.46	7.90	8.24
Interest on investment	<u>11.32</u>	<u>17.90</u>	<u>24.38</u>	<u>26.85</u>
Total expense per cow	132.62	267.84	323.31	421.18
Management income per cow	4.62	61.06	23.09	104.12
Farm income per cow	36.48	111.36	124.51	165.00

We had a similar dairy management study here for the 4 years 1929-1932. We present the 4 year average for that period above so it may be compared with the average for the 1949 records. The 1949 records show the dairies covered were a little larger and more efficient with higher production per cow and fewer hours of labor. Feed used is not much different except that we use less green feed and roots now and more pasture -- letting the cows do more harvesting. Costs and prices are much higher now and earnings are much better, but in 1949 dollars which do not buy as much as dollars did 17 to 20 years ago.

For an interesting comparison, we present study averages for 1949 for Fresno and Madera counties. Our local manufacturing milk dairies are larger and more efficient than the manufacturing milk dairies in that valley area and show an encouragingly larger management income per cow. But the valley market milk dairies are larger and highly efficient and profitable.

Report Issued at Office of
AGRICULTURAL EXTENSION SERVICE

Room 307, Post Office Bldg., Eureka, California

June 1950

UC COOPERATIVE EXTENSION