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BEEF CATTLE MANAGEMENT STUDY
LASSEN AND SHASTA COUNTIES

1940

A study of income, costs and earnings
on 12 beef cattle enterprises in Lassen County and
7 in Shasta County for the record year ending February 28, 1941

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INTRODUCTION

Beef cattle management studies have been conducted by the Agricultural Extension Service in cooperation with progressive cattlemen in Lassen and Shasta counties for the past six years. Reports have been published from time to time on the progress of these studies as well as for similar studies in other counties in the state. This year, regional reports are being issued for studies in the San Joaquin Valley counties, the south coast counties and the northeastern counties. The latter is comprised of records from Lassen and Shasta counties, presented herein. In addition to the detailed analysis of the 1940 individual records as given in tables 8 to 12, inclusive, this report gives a comparison of yearly averages of all records for the two counties for the past three years in tables 3 to 7, and a general summary of separate county averages for the entire six-year period in tables 1 and 2.

The purpose of these studies is to develop information useful to cattlemen in determining the most profitable methods of beef production on their own ranches. Individual cooperators, especially, have an opportunity to more closely analyze their management practices by comparing their costs, income, earnings, and related factors with other similar producers.

Although the records kept in this study were on typical beef cattle ranches in the two counties, the averages shown in this report should not be taken as actual industry averages for the area.

Beef Cattle Enterprise a Part of Cattle Ranching Business

In order to understand this study it is necessary to consider a cattle ranch as being divided into several enterprises, one of which is the beef cattle enterprise. Data and figures in this report pertain to the beef enterprise only, as separate from the ranching business, which may involve the production of hay, pasture, and other products. The beef enterprise is charged only with expenses for the beef cattle. Taxes on land and labor in the growing of hay and other crops are charged to those items, rather than to the cattle enterprise. However, the pasture charge for the use of owned range includes taxes on the land, as well as other costs making up a fair rental charge. Likewise, other home-grown feeds, such as hay and grain, are charged to the beef enterprise at farm value, which is the estimated net amount they would bring if sold. These values usually result in some earnings to the operator in addition to those from the beef enterprise shown in this report.

The charging of all direct and nondirect expenses to the beef enterprise and crediting it with all income produced, whether sold or not, provides for a statement of profit and loss or an analysis and comparison of incomes and expenses. Such a statement is valuable for comparisons on the farm with other enterprises or with the same enterprise from year to year, and also valuable in making comparison with similar enterprises on other farms. Such comparisons disclose weak and strong points in management practices, and usually indicate where effort should be applied to render the enterprise more profitable.

Animal Unit Basis of Comparison

To compare beef enterprises on different farms, production costs, income, etc., must be computed for a uniform unit. The "animal unit" or mature head equivalent is the most suitable unit in which to measure or express the size of a herd, since it best represents the feed-consuming needs of the herd. Cattlemen think in terms of a breeding cow, which is the appropriate unit for measuring calf crop, but doesn't serve very well as a unit of measure when herds vary so widely in the proportion of cows to all stock or where there are no cows in the herd.

An animal unit is the equivalent of a mature beef animal, a bull, cow, or steer over two years of age. Yearlings (animals from 1 to 2 years) are .75 animal units per head, or it takes 1-1/3 head of yearlings to equal 1 animal unit. Calves under a year are 1/2 animal unit each, or it takes 2 calves to make an animal unit.

Net Income or Profit

The net income or profit earned by an enterprise is the difference between income and expense. Since accounting for different purposes may follow slightly different methods, the computed profit may not always be the same. In these records a uniform method of calculation was followed throughout so the relative profit in comparing different enterprises will show the relative efficiency or earning ability, even though the exact figures may not check with those arrived at in the individual's personal accounting system. Some producers want as a profit the figure by which their income exceeds their actual cash outlay; others want their income above outlay; less their own wages for work done. In order to supply a number of earning ratios or figures the following standard measures of net income are used in this report.

Management Income is the amount by which total income exceeds total costs, with costs including the wages of the operator for work actually done, depreciation on facilities and interest on investment. This is the amount left to reimburse the operator for his skill in management after all expenses have been met. If a loss occurs, it will be indicated by a minus sign (-) in front of the loss.

Labor and Management Income is the management income plus value of the operator's labor included as an expense. It is called, for brevity, Labor Income, and is the amount the operator can withdraw from his business to pay him for his labor and management.

Capital and Management Income is the management income plus the interest on investment included as such in the expense. It is the amount the producer can consider his return for management and invested capital. It is not shown in this report but may easily be computed by adding the proper figures.

Farm Income is the labor income plus interest on investment. It is the total amount receivable from the enterprise after meeting cash costs, the value of farm-produced feeds and depreciation on facilities. It includes a profit for skill in management, wages for labor performed and interest on capital invested. It is the amount the operator can safely withdraw from the business to live on and pay interest and principal on indebtedness, if any. Interest actually paid is not recognized in these costs, it being assumed that the interest computed on the investment could cover interest on borrowed capital, as well as that invested by the operator.

Total Farm Income is the farm income for the beef enterprise plus the interest on the owned range which was included as a part of the pasture cost in computing the beef record. This is the total amount the cattleman who is out of debt and has no interest to pay makes from his combined beef cattle and range enterprises.

Table 1 - General Summary Lassen County Records - 1935-1940 inclusive

	1935	1936	1937	1938	1939	1940	6-year average
Number of records	10	10	9	9	11	12	61
Average number of animal units per record	639	657	558	356	665	377	3252
Cows per 100 animal units	47.5	46.3	49.4	50.9	53.0	55.8	50.5
Calves raised per 100 cows	74.9	76.7	68.0	75.2	72.4	77.9	74.2
Calves raised per 100 animal units	35.6	35.5	33.6	35.8	38.4	43.5	37.1
Pounds of beef produced per animal unit	281	277	240	298	276	304	279
Pounds of beef sold per animal unit	243	212	287	410	278	271	284
Average weight per head, stock sold	917	880	798	827	798	759	830
Average price per hundredweight, stock sold	\$ 5.86	\$ 6.48	\$ 6.14	\$ 5.68	\$ 6.48	\$ 7.52	\$ 6.41
Average value per hundredweight all beef produced	5.59	6.11	6.17	5.73	6.23	7.15	6.19
Net cost of production per hundredweight	5.48	5.35	6.21	4.99	6.11	5.77	5.65
Management income per hundredweight	.11	.76	-.04	.74	.12	1.38	.54
Income per animal unit from stock sold	14.22	13.71	17.65	23.30	18.01	20.40	17.88
Increase in stock inventory value per animal unit	3.17	5.24	--	--	--	2.58	.67
Less cost of stock bought	1.70	2.01	1.23	.77	.76	1.25	1.29
Less decrease in stock inventory	--	--	1.49	5.42	.06	--	--
Value of beef produced per animal unit	15.69	16.94	14.93	17.11	17.19	21.73	17.26
Hay cost per animal unit	5.40	5.47	6.08	4.38	5.34	6.63	5.55
Concentrate cost per animal unit	.40	.31	.49	.69	1.10	.55	.59
Pasture cost per animal unit	3.68	3.28	2.89	3.77	4.42	3.79	3.64
Salt and minerals, cost per animal unit	.09	.09	.08	.09	.14	.12	.10
Total feed cost per animal unit	9.57	9.15	9.54	8.93	11.00	11.09	9.88
Total labor cost per animal unit	2.08	1.93	1.96	1.94	2.05	2.45	2.07
Horse, auto, truck and miscellaneous	1.14	1.15	1.04	1.07	1.11	1.41	1.15
Depreciation cost per animal unit	.36	.34	.34	.51	.41	.46	.40
Interest cost per animal unit	2.32	2.38	2.28	2.45	2.30	2.27	2.33
Total cost of production per animal unit	15.47	14.95	15.16	14.90	16.87	17.68	15.83
Less miscellaneous income per animal unit	.10	.12	.12	--	.01	.14	.08
Net cost of production per animal unit	15.37	14.83	15.04	14.90	16.86	17.54	15.75
Management income per animal unit	.32	2.11	-.11	2.21	.33	4.19	1.51
Farm income (beef enterprise only) per animal unit	3.37	5.20	2.90	5.57	3.19	7.41	4.61

Table 2 - General Summary Shasta County Records 1935-1940 Inclusive

	1935	1936	1937	1938	1939	1940	6-year average
Number of records	11	12	9	6	7	7	52
Average number of animal units per record	443	290	376	264	278	303	326
Cows per 100 animal units	49.4	45.1	50.4	50.1	47.3	47.7	48.3
Calves raised per 100 cows	56.4	79.8	71.8	63.2	74.2	73.0	69.7
Calves raised per 100 animal units	27.9	36.0	36.2	31.7	35.1	34.9	33.6
Pounds of beef produced per animal unit	240	279	310	276	270	297	279
Pounds of beef sold per animal unit	262	296	424	362	234	296	312
Average weight per head, stock sold	981	916	812	933	924	896	910
Average price per cwt., stock sold	\$ 5.99	\$ 6.64	\$ 6.23	\$ 6.37	\$ 6.37	\$ 7.81	\$ 7.34
Average value per cwt. all beef produced	6.11	6.63	6.34	6.65	6.24	7.61	6.61
Net cost of production per cwt.	6.07	7.06	5.66	5.75	6.39	5.72	6.09
Management income per cwt.	.04	- .43	.68	.90	- .15	1.89	.52
Income per animal unit from stock sold	15.69	19.64	26.40	23.03	14.93	23.10	20.47
Increase in stock inventory value per animal unit	1.19	1.54	--	--	2.67	.80	.13
Less cost of stock bought	2.20	2.66	2.45	3.58	.78	1.29	2.16
Less decrease in stock inventory	--	--	4.33	1.06	--	--	--
Value of beef produced per animal unit	14.68	18.52	19.62	18.39	16.82	22.61	18.44
Hay cost per animal unit	2.32	6.59	7.11	5.88	6.98	7.14	6.00
Concentrate cost per animal unit	.02	1.36	.41	.15	.17	.15	.38
Pasture cost per animal unit	5.43	4.97	4.38	4.30	4.85	4.06	4.67
Salt and minerals per animal unit	.16	.11	.12	.13	.11	.11	.12
Total feed cost per animal unit	7.93	13.03	12.02	10.46	12.11	11.48	11.17
Total labor cost per animal unit	2.80	2.35	1.70	1.59	1.54	1.67	1.94
Horse, auto, truck and miscellaneous	1.13	1.20	1.01	.93	.95	1.02	1.04
Depreciation cost per animal unit	.40	.56	.42	.52	.38	.44	.45
Interest cost per animal unit	2.31	2.58	2.37	2.40	2.26	2.37	2.38
Total cost of production per animal unit	14.57	19.72	17.52	15.90	17.24	16.98	16.98
Less miscellaneous income per animal unit	--	--	--	--	--	--	--
Net cost of production per animal unit	14.57	19.72	17.52	15.90	17.24	16.98	16.98
Management income per animal unit	.11	- 1.20	2.10	2.49	- .42	5.63	1.46
Farm Income (beef enterprise only) per animal unit	3.21	2.47	5.09	5.86	2.58	8.73	4.66

TABLE 3 - General Summary and Net Income per Animal Unit
Lassen and Shasta County Records Combined

	1940 Records			1939	1938
	High group	Low group	Average		
Number of records	10	9	19	18	15
Average number animal units per record	334	366	349	515	319
Cows per 100 animal units	51.2	55.2	53.2	51.8	50.6
Calves raised per 100 cows	79.6	73.6	76.5	72.8	71.3
Calves raised per 100 animal units	40.8	40.6	40.7	37.7	36.1
Head died per 100 animal units	1.3	2.1	1.7	1.3	2.1
Net head raised per 100 animal units	39.5	38.5	39.0	36.4	34.0
Pounds of beef produced per animal unit	316	287	302	275	291
Pounds of beef sold per animal unit	289	269	279	269	394
Average price per cwt. beef sold	\$7.77	\$7.46	\$7.62	\$6.46	\$5.89
Average value per cwt. all beef produced	7.35	7.22	7.29	6.23	6.02
Net cost of production per cwt.	5.00	6.59	5.75	6.17	5.23
Management income per cwt.	2.35	.63	1.54	.06	.79
Income per animal unit from sale of:					
Bulls	.19	.34	.26	.24	.72
Cows and 2-year heifers	4.94	5.64	5.29	4.16	6.56
Calves	2.41	1.62	2.02	1.00	1.47
Heifers 1 to 2	1.68	1.66	1.68	.59	.51
Steers 1 to 2	6.14	7.34	6.39	3.71	3.45
Steers 2 to 3	4.88	3.44	4.49	6.32	8.56
Steers over 3	2.22	--	1.13	1.35	1.94
Total stock sold	22.46	20.04	21.26	17.37	23.21
Increase in stock inventory	2.43	1.59	2.01	.51	--
Less cost of stock bought	1.64	.88	1.26	.76	1.70
Less decrease in stock inventory	--	--	--	--	3.98
Value of beef produced per animal unit	23.25	20.75	22.01	17.12	17.53
Net cost of production per animal unit	15.83	18.93	17.37	16.94	15.23
Management income per animal unit	7.42	1.82	4.64	.18	2.30
Plus value of operator's labor	.80	.95	.88	.60	.93
Labor income	8.22	2.77	5.52	.78	3.23
Plus interest on beef enterprise investment	2.22	2.39	2.30	2.29	2.43
Farm income	10.44	5.16	7.82	3.07	5.66
Plus interest on investment in range	1.27	1.85	1.56	1.90	1.42
Total farm income	11.71	7.01	9.38	4.97	7.08

As a means of analyzing some of the important factors which have a bearing on the profitableness of a beef enterprise the records in the study in 1940 were divided into two groups. The high group consists of the 10 most profitable records, and the low group of the 9 least profitable records. Averages for all 19 records in 1940 are compared with averages for the 1939 and 1938 record years. Factors favorable to the high group this year included a higher calving percentage, more pounds of beef produced per animal unit, a little higher average selling price, and lower costs of production. This group obtained an income above all costs of \$7.42 per animal unit, as compared to \$1.82 for the low group. The 1940 record year was by far the most profitable, not only for the last three years as shown in this table, but for the past six years, as may be seen in Tables 1 and 2.

TABLE 4 - Inputs, Prices, and Expenses per Animal Unit
Lassen and Shasta County Records Combined

	1940 Records			Average	Average
	High	Low	Average		
Pounds of hay fed per animal unit	1809	2423	2113	1818	1665
Pounds of concentrates	24	30	27	47	34
Average cost or value of hay per ton	\$6.41	\$6.45	\$6.43	\$6.26	\$5.86
Average cost or value of concentrates per cwt.	1.46	1.69	1.58	1.93	1.51
Hours of hired labor per animal unit	4.2	5.2	4.7	4.9	3.9
Hours of operator's labor per animal unit	2.8	3.0	2.9	1.8	3.4
Total hours of labor per animal unit	7.0	8.2	7.6	6.7	7.3
Pasture costs per animal unit					
National forest, Taylor Grazing	\$.39	\$.30	\$.34	\$.33	\$.33
Other rented pasture	1.24	.71	.98	.88	1.09
Own cropland (aftermath)	.64	.84	.74	.84	.80
Own permanent pasture	1.47	2.16	1.82	2.46	1.72
Total pasture cost	3.74	4.01	3.88	4.51	3.94
Hay cost per animal unit	5.80	7.81	6.80	5.69	4.88
Concentrate cost	.35	.50	.42	.90	.51
Salt and minerals	.13	.10	.11	.13	.11
Total feed cost per animal unit	10.02	12.42	11.21	11.23	9.44
Hired labor cost	1.18	1.47	1.32	1.35	.89
Operator's and family labor	.80	.95	.88	.60	.93
Horse and dog cost	.41	.40	.40	.41	.42
Auto and truck cost	.29	.24	.27	.24	.19
Miscellaneous costs	.58	.65	.62	.43	.41
Depreciation, buildings, fences, etc.	.41	.51	.46	.40	.52
Interest on investment at 5 per cent (beef ent.)	2.22	2.39	2.30	2.29	2.43
Total cost of production per animal unit	15.91	19.03	17.46	16.95	15.23
Less miscellaneous income	.08	.10	.09	.01	--
Net cost of production per animal unit	15.83	18.93	17.37	16.94	15.23

Table 4 gives an analysis of expenses per animal unit and related factors. As shown in this table, feed costs constitute approximately two thirds of the total cost of production. It is, therefore, obvious that it is in connection with these costs that the cattleman has the greatest opportunity of increasing his profits through better management practices. Those in the high group in this study rented a larger proportion of their total pasture needs, and owned less than those in the low group. Although their total pasture cost was not very much less than that of the low group, they apparently obtained considerably more feed value, since the amount of hay required was approximately 600 pounds less per animal unit. This resulted in a hay cost of \$2 less per animal unit. Total feed cost per animal unit for the more profitable group was \$2.40 lower than for the less profitable records. The more profitable group was \$2.40 lower than for the less profitable records. The more profitable group also had slight advantages in labor and overhead costs. The net cost of production of beef is obtained by deducting income from milk sold, show premiums, etc., from the total cost. The average net cost per animal unit has increased during the last three years from \$15.32 to \$17.37.

TABLE 5 - Investment per Animal Unit
Lassen and Shasta County Records Combined

	1940 Records			Average 1939	Average 1938
	High	Low	Average		
Land in lots and corrals	\$.56	\$.51	\$.53	\$.51	\$.57
Buildings, fences, and other improvements	3.47	6.17	4.81	4.90	6.04
Equipment	.49	1.01	.75	.74	.77
Feed and miscellaneous supplies on hand	3.01	4.08	3.54	3.29	3.06
Stock	36.94	35.91	36.43	36.39	38.17
Total investment beef enterprise	44.47	47.68	46.06	45.83	48.61
Land in range and permanent pasture	28.71	35.07	31.87	38.02	28.39
Total investment, beef and range	73.18	82.75	77.93	83.85	77.00

The investment figures shown in Table 5 should not be construed as being representative of the amount of capital required in entering the beef cattle business at the present time. The figures shown for improvements and equipment are depreciated values which would probably approximate one half of the original cost of such facilities. Land values and stock values as shown in this table are undoubtedly considerably lower than one would expect to find under current price conditions, if he were purchasing a beef cattle enterprise. Also, it should be remembered that these figures are for just the beef enterprise, which is only a part of a complete cattle ranching unit. Investment in dwelling house and other buildings, and other improvements, as well as for land used in conjunction with the production of hay or other crops and other livestock enterprises, would be in addition to the figures shown in this table.

The average total farm income (including interest on investment in range land) during the six years of the study was approximately \$6.25 per animal unit. If interest on land needed for the production of all hay requirements were added to this, the total farm income for the complete ranch would be about \$7.30 per animal unit. On this basis, to obtain an annual income of \$1600, approximately 220 animal units would be required, which would involve a total debt-free investment of about \$22,000 in the cattle enterprise, range land and hay land. In addition to this, the operator would need pasture facilities in national forest, public domain, and other rented land, in the same proportion as for cooperators in the study. Investment in the family dwelling and other facilities are not included in the above figure.

Roughly, it would take between \$25,000 and \$30,000 investment, free of debt, to set up a family-sized beef cattle ranch in this area, under conditions similar to those of the cooperators in this study.

Table 6 - Weights and Selling Prices of Beef Cattle Sold by Groups
Lassen and Shasta County Records Combined

	1940 Records			Average	Average
	High	Low	Average	1939	1938
Breeding bulls					
Average weight	1500	-	1500	1533	1400
Value per head	\$ 150.00	-	\$150.00	\$97.00	\$116.67
Price per cwt.	10.00	-	10.00	6.33	8.33
Beef bulls and stags, average weight	1370	1475	1437	1310	12.98
Value per head	\$ 70.74	\$93.68	\$ 85.23	\$78.74	\$ 66.36
Price per cwt.	5.16	6.35	5.93	6.01	5.11
Cows, average weight	1021	993	1005	1005	988
Value per head	\$ 64.76	\$59.46	\$ 61.65	\$47.78	\$ 43.70
Price per cwt.	6.34	5.99	6.13	4.76	4.42
Calves, average weight	368	381	373	310	326
Value per head	\$ 35.53	\$36.73	\$ 35.99	\$25.54	\$ 23.64
Price per cwt.	9.65	9.63	9.64	8.25	7.25
Heifers 1 to 2, average weight	683	696	690	583	660
Value per head	\$ 52.65	\$49.41	\$ 51.00	\$38.58	\$ 36.51
Price per cwt.	7.71	7.10	7.39	6.62	5.54
Steers 1 to 2, average weight	750	728	738	714	776
Value per head	\$ 62.15	\$60.53	\$ 61.24	\$51.06	\$ 53.13
Price per cwt.	8.28	8.32	8.30	7.15	6.85
Steers 2 to 3, average weight	1055	982	1025	959	978
Value per head	\$ 85.58	\$82.94	\$ 84.50	\$67.37	\$ 64.83
Price per cwt.	8.11	8.44	8.24	7.03	6.63
Steers over 3, average weight	1055	1050	1055	1026	1014
Value per head	\$ 82.62	\$86.73	\$ 82.66	\$70.04	\$ 69.39
Price per cwt.	7.83	8.26	7.84	6.82	6.85
Heifers 2 to 3, average weight	868	758	860	830	819
Value per head	\$ 64.69	\$51.48	\$ 63.70	\$52.35	\$ 45.90
Price per cwt.	7.45	6.79	7.41	6.30	5.61
Average weight per head, all stock sold	805	795	800	818	856
Average value per head	\$ 62.56	\$59.28	\$ 60.98	\$52.85	\$ 50.42
Average price per cwt.	7.77	7.46	7.62	6.46	5.89

Table 6 is presented to show the average weights and prices received for the different classes of livestock sold, since these are important factors having a bearing on the average price received per hundredweight for all livestock sold. The larger the proportion of calves sold, the higher will tend to be the average selling price. This table should be useful in conjunction with other tables in this report in figuring the most profitable age at which to sell beef cattle under a given set of conditions. In addition to selling price, feed resources and other management factors enter into the picture in determining the most profitable age at which to sell cattle on a given ranch. In Lassen and Shasta counties the trend in recent years has been toward the selling of a larger proportion of calves and yearlings, as will be noted in Table 3. In this table it will be noted that the average weight per head for all stock sold has decreased from 856 pounds in 1931 to 800 pounds in 1940.

Table 7 - Inputs and Costs per Hundredweight of Beef Produced
Lassen and Shasta County Records Combined

	1940 Records			Average 1939	Average 1938
	High	Low	Average		
Pounds of hay	571	844	700	662	572
Pounds of concentrates	7.6	10.1	8.9	17.1	11.7
Hours of labor	2.2	2.9	2.5	2.4	2.6
Hay cost per cwt. of beef produced	\$1.84	\$2.72	\$2.25	\$2.07	\$1.67
Concentrate cost	.11	.17	.14	.33	.17
Range and pasture	1.18	1.40	1.28	1.64	1.36
Salt and minerals	.04	.03	.04	.05	.04
Total feed cost per cwt. of beef	3.17	4.32	3.71	4.09	3.24
Cost of hired labor	.37	.51	.44	.49	.31
Value of operator's labor	.25	.33	.29	.22	.32
Horse and dog cost	.13	.14	.13	.15	.14
Auto and truck	.09	.08	.09	.09	.07
Miscellaneous, taxes, etc.	.18	.23	.21	.16	.14
Depreciation	.14	.18	.15	.14	.18
Interest on investment	.70	.83	.76	.83	.83
Total cost of production	5.03	6.62	5.78	6.17	5.23
Less miscellaneous income	.03	.03	.03	---	---
Net cost of production per hundredweight	5.00	6.59	5.75	6.17	5.23
Average value all beef produced	7.35	7.22	7.29	6.23	6.02
Management income per hundredweight	2.35	.63	1.54	.06	.79
Labor income	2.60	.96	1.83	.28	1.11
Farm income	3.30	1.79	2.59	1.11	1.94
Total farm income, beef and range	3.70	2.44	3.11	1.80	2.43

The net amount of beef produced in any given year takes into account all stock sold and bought, as well as opening and closing inventories. Weights and values of stock sold plus the closing inventory, less stock bought and the opening inventory gives the net production for a given year. As a rule, the amount and value of beef produced does not correspond with that which was sold, for some years cattlemen will sell less than they produce, while in other years, they will sell more, depending upon market prices, feed conditions, and other management factors. In Table 3 it will be noted that those in the study sold about 35 per cent more than they produced in 1938, and a little less than they produced in 1939 and 1940.

Table 7 gives an analysis of the costs on a per hundredweight of beef produced for the more profitable and less profitable groups in 1940, as well as averages for all records during the past three years. Due principally to higher production and lower costs per animal unit, the more profitable records averaged a net cost of production per hundredweight of \$1.59 less than the low group. This lower cost, coupled with a slightly higher value of all beef produced resulted in an income above all costs of \$2.35 per hundredweight, as compared to \$0.63 for the low group. The average net cost of production for all records during the last three years was \$5.71 per hundredweight.

Table 8 - General Summary of Individual Records on an Animal Unit Basis - 1940

Ser. No.	Net hd. raised	Head Died	Main animals sold in 1940 aside from cows				Lbs. produced per a.u.	Av. value per cwt. prod.	Value produced	Net cost of prod.	Management income	Labor income	Farm income	Total farm income
			Kind	Av. Wt.	Value per hd.	Price per cwt.								
											Dollars			per animal unit
111	43.3	1.6	Calves	439	\$44.45	\$10.13	355	\$ 8.08	\$28.71	\$11.56	\$17.15	\$17.73	\$19.88	\$20.60
147	44.1	2.2	St.1-2	852	73.07	8.58	401	8.66	34.76	24.91	9.85	10.84	13.00	14.64
141	42.5	0.0	St.1-2	608	50.00	8.22	539	8.61	26.19	16.82	9.37	10.74	13.59	17.39
154	35.5	2.8	St.2-3	1057	87.20	8.25	327	8.05	26.32	18.25	8.07	8.65	11.10	11.30
113	47.7	2.7	St.1-2	754	59.95	7.95	330	6.89	22.80	14.76	8.04	8.66	10.92	12.26
116	31.8	1.1	St.1-2	589	48.56	8.25	281	7.32	20.55	13.21	7.34	8.36	10.28	11.41
110	62.5	0.6	Calves	323	29.60	9.17	275	7.42	20.43	15.25	5.18	6.69	9.00	11.16
140	28.0	0.5	St.											
			over 3	1055	82.62	7.83	265	6.64	17.61	12.49	5.12	5.58	7.86	8.55
153	42.8	0.7	St.2-3	934	72.54	7.76	280	7.24	20.28	15.87	4.41	5.99	8.33	10.91
117	36.4	0.0	St.2-3	1191	94.92	7.97	333	6.59	21.93	17.86	4.07	4.92	6.90	8.06
114	47.1	0.7	St.1-2	884	72.85	8.25	360	6.79	24.43	20.57	3.86	6.32	9.88	12.40
104	41.5	4.2	St.1-2	738	60.39	8.18	307	7.11	21.83	18.30	3.53	4.06	6.52	9.06
102	57.1	3.7	Calves	395	38.05	9.62	290	8.07	23.42	20.13	3.29	6.09	8.53	8.54
148	25.2	1.4	St.2-3	1101	97.05	8.82	259	8.16	21.15	18.03	3.12	3.54	5.58	5.58
106	43.3	0.2	St.1-2	652	50.62	7.76	301	6.49	19.52	16.92	2.60	3.47	5.67	7.46
107	37.9	1.4	St.1-2	648	54.08	8.35	289	7.42	21.41	18.96	2.45	4.44	6.95	8.39
157	33.7	1.8	St.2-3	1063	90.43	8.50	278	6.48	18.02	16.73	1.29	2.12	5.04	6.35
115	31.1	2.5	St.1-2	720	61.86	8.59	259	7.82	20.22	20.04	.18	.55	2.70	6.04
103	40.7	1.4	St.1-2	772	65.63	8.50	286	6.80	19.40	22.92	- 3.52	-2.50	.25	1.09
Ht 10	39.5	1.3	St.1-2	750	62.15	8.28	316	7.35	23.25	15.83	7.42	8.22	10.44	11.71
Low 9	38.5	2.1	St.1-2	728	60.53	8.32	287	7.22	20.75	18.93	1.82	2.77	5.16	7.01
Av. All	39.0	1.7	St.1-2	738	61.24	8.30	302	7.29	22.01	17.37	4.64	5.52	7.82	9.38

A general summary of the 19 individual records included in the 1940 study is given in Table 8. Records are arranged downwards in order of decreasing management income per animal unit, as shown in the fourth from the last column on the right. Group averages for the 10 most profitable and the 9 least profitable, as well as for all records, are given at the bottom of the table. All records in this year's study except one succeeded in showing an income above all costs of production. No. 111's high management income was the result of better than average production and selling price, coupled with exceedingly low costs. No. 103's lower-than-average selling price and high costs account principally for its failure to show a management income. Considerable variation in the important profit-determining factors will be noted. Pounds produced per animal unit, one of the more important factors, varied from 259 pounds for Nos. 115 and 148 up to 539 pounds for No. 141. Those in the high group averaged 29 pounds more production per animal unit than those in the low group.

Table 9 - Analysis of Pasture Costs and Other Inputs in Individual Records - 1940

Ser. No.	Pasture Costs per Animal Unit					Hay Fed		Concentrates		Hours Labor per An. Unit		Cost per Hr.	Investment per An. Unit	
	Nat'l For., Tay. Grazing	Other Rented	Own Land		Total Cost	Lbs. per A. U.	Price Per Ton	Lbs. per A.U.	Price per Cwt.	per An. Unit		Hired Labor	Beef Ent.	Range & past.
			Crop aftmth.	Perm'n't Pasture						Hired	Operator & Family			
111	1.42	.99	.50	1.01	3.92	326	6.00	54	1.70	1.5	1.9	.25	43.04	14.37
147	.76	.09	.95	1.92	3.72	3648	7.52	32	1.12	7.6	4.0	.25	43.28	32.84
141	--	1.85	.95	4.48	7.28	634	8.00	--	--	--	4.6	--	57.03	75.90
154	.16	3.06	1.21	.25	4.68	1798	6.99	55	1.27	6.5	1.9	.27	46.43	3.82
113	.35	.06	.81	1.18	2.40	2029	6.00	60	1.48	3.0	2.1	.27	45.22	26.88
116	.55	.30	.38	1.28	2.51	1476	5.78	--	--	6.8	3.4	.30	38.42	22.55
110	.49	.26	.91	2.82	4.48	1252	6.00	18	1.93	1.2	5.0	.30	46.26	48.89
140	.10	2.68	--	.92	3.70	1580	6.05	--	--	2.0	1.8	.25	45.51	13.78
153	--	5.35	--	3.16	8.51	214	7.00	13	1.65	1.5	5.2	.25	46.87	51.64
117	.28	.41	.94	1.41	3.04	2525	6.09	--	--	8.2	2.8	.30	39.68	23.39
114	.50	--	1.09	3.42	5.01	2050	6.00	34	1.20	--	8.2	--	71.25	50.47
104	.12	.40	.85	3.03	4.40	2177	6.00	45	1.50	6.8	1.8	.25	49.24	50.75
102	.02	1.75	.62	.01	2.40	2677	6.00	64	2.05	1.2	9.3	.25	48.90	.21
148	.41	1.45	1.16	--	3.02	2433	8.00	--	--	4.2	1.4	.27	40.88	--
106	.46	.58	.70	2.24	3.98	1915	6.00	42	1.20	7.2	2.6	.28	44.04	35.87
107	.36	.44	.46	1.85	3.11	2885	6.00	17	1.86	5.9	6.6	.29	50.23	29.63
157	.26	.38	--	1.48	2.12	2110	8.00	1	1.93	2.8	2.8	.25	58.42	26.28
115	.32	.18	.85	4.02	5.37	2590	6.00	35	2.22	5.3	.5	.34	42.91	57.14
103	.33	1.97	.39	1.96	4.65	3473	6.76	--	--	6.2	3.4	.30	44.98	25.80
Hi. 10	.39	1.24	.64	1.47	3.74	1809	6.41	24	1.46	4.2	2.8	.28	44.47	28.71
Low 9	.30	.71	.84	2.16	4.01	2423	6.45	30	1.69	5.2	3.0	.28	47.68	35.07
Av. All	.34	.98	.74	1.82	3.88	2113	6.43	27	1.58	4.7	2.9	.28	46.06	31.87

Pasture costs as well as other factors having a bearing on total costs of production are analyzed in Table 9 for the individual 1940 records. (Records are arranged in the same order as explained in the preceding table.) Pasture costs have been broken down into the 4 following classifications: National forest and Taylor grazing fees, other rented land, crop aftermath from owned cropland, and owned permanent pasture land. In general, it will be noted that those with relatively low total pasture costs fed more hay than those with high pasture costs. Nos. 141 and 153, who had the highest total pasture costs per animal unit, fed only a small amount of hay as compared to most of the other records. No. 111 was exceptional in that he fed only a small amount of hay and at the same time had about an average total pasture cost. This was probably due to the fact that he obtained a larger proportion of his pasturage from National forest and public domain than did any of the other cooperators in the study. All but 6 records in the study showed some supplementing with concentrates. No. 102 fed the largest amount of concentrates, averaging 64 pounds per animal unit.

TABLE 10 - Expense per Animal Unit in Detail in Individual Records - 1940

Serial Number	Hay	Concentrates	Range and pasture cost	Salt and minerals	Total feed cost	Hired labor	Operator's labor	Horses and dogs	Auto and truck	Miscellaneous taxes etc.	Depreciation	Interest on investment	Total expense of production	Miscellaneous income
111	.98	.91	3.92	.32	6.13	.39	.58	.27	.58	.82	.64	2.15	11.56	--
147	13.72	.36	3.72	.26	18.06	1.90	.99	.53	.45	.37	.45	2.16	24.91	--
141	2.53	--	7.28	.06	9.87	--	1.37	.46	.32	.77	1.18	2.85	16.82	--
154	6.29	.69	4.68	.04	11.70	1.80	.58	.69	.14	.39	.50	2.45	18.25	--
113	6.09	.89	2.40	.19	9.57	.83	.62	.38	.23	.85	.42	2.26	15.16	.41
116	4.26	--	2.51	.08	6.85	2.04	1.02	.34	.22	.66	.32	1.92	13.37	.16
110	3.75	.35	4.48	.10	8.68	.35	1.51	.38	.17	.74	1.11	2.31	15.25	--
140	4.78	--	3.70	.04	8.52	.50	.46	.28	.02	.29	.14	2.28	12.49	--
153	.75	.21	8.51	.14	9.61	.37	1.58	.40	.89	.20	.48	2.34	15.87	--
117	7.69	--	3.04	.11	10.84	2.46	.85	.50	.44	.67	.12	1.98	17.86	--
114	6.15	.41	5.01	.20	11.77	--	2.46	.60	.08	.47	1.63	3.56	20.57	--
104	6.53	.68	4.40	.04	11.65	1.71	.53	.45	.09	.72	.69	2.46	18.30	--
102	8.03	1.30	2.40	.09	11.82	.31	2.80	.43	1.25	.79	.29	2.44	20.13	--
148	9.73	--	3.02	.25	13.00	1.14	.42	.39	.32	.30	.41	2.05	18.03	--
106	5.75	.51	3.98	.07	10.31	2.00	.87	.19	.12	.81	.42	2.20	16.92	--
107	8.66	.31	3.11	.06	12.14	1.70	1.99	.55	.29	.66	.61	2.51	20.45	1.49
157	8.44	.02	2.12	.06	10.64	.68	.83	.48	.17	.33	.68	2.92	16.73	--
115	7.77	.78	5.37	.16	14.08	1.82	.37	.41	.16	.75	.32	2.15	20.06	.02
103	11.74	--	4.65	.04	16.43	1.86	1.02	.32	.16	.70	.18	2.25	22.92	--
H1. 10	5.80	.35	3.74	.13	10.02	1.18	.80	.41	.29	.58	.41	2.22	15.91	.08
Low 9	7.81	.50	4.01	.10	12.42	1.47	.95	.40	.24	.65	.51	2.39	19.03	.10
Av. All	6.80	.42	3.88	.11	11.21	1.32	.58	.40	.27	.62	.46	2.30	17.46	.09

Table 10 presents a detailed comparison of expenses per animal unit for individual records in 1940. An analysis of these figures will show why some operators had low-cost production and others had exceptionally high costs of production. Total feed costs ranged from \$6.13 for No. 111 up to \$18.06 for No. 147. Feed costs constituted about two-thirds of the total cost of production. Operators, therefore, should give first consideration to the analysis of feeding practices and costs, since greatest savings can probably result from improved feeding practices. However, the other less important items of expense, such as labor and overhead costs of interest and depreciation should not be overlooked. Total costs of production ranged from \$11.56 for No. 111 up to \$24.91 per animal unit for No. 147. Although the latter had the highest total cost per animal unit of any in the study, this record was the second most profitable, due to the fact that the cooperator had much higher than average production and obtained the highest average selling price per hundredweight of all records, as shown in Table 8.

TABLE 11 - COSTS, Value and Net Income per Hundredweight of Beef Produced, 1940 Records

Serial Number	Hay cost	Con- cen- trate cost	Range and pas- ture	Salt & min- eral cost	Total feed cost	Hired labor	Oper- ator's labor	Horse Auto misc. cost	Depreci- ation	Int. on in- vest- ment	Total cost of prod- uction	Av. val. per cwt. prod.	Manage- ment income	Total farm income
111	.28	.26	1.10	.09	1.73	.11	.16	.46	.18	.61	3.25	8.08	4.83	5.80
147	3.42	.09	.93	.06	4.50	.48	.25	.33	.11	.54	6.21	8.66	2.45	3.65
141	.84	--	2.39	.02	3.25	--	.45	.50	.39	.94	5.53	8.61	3.08	5.72
154	1.92	.21	1.43	.01	3.57	.55	.18	.37	.16	.75	5.58	8.05	2.47	3.46
113	1.84	.27	.72	.06	2.89	.25	.19	.45	.11	.68	4.59	6.89	2.43*	3.71
116	1.52	--	.89	.03	2.44	.73	.36	.44	.11	.68	4.76	7.32	2.62*	4.06
110	1.36	.13	1.62	.04	3.15	.13	.55	.47	.40	.84	5.54	7.42	1.88	4.05
140	1.80	--	1.39	.02	3.21	.19	.18	.22	.05	.86	4.71	6.64	1.93	3.22
153	.27	.08	3.04	.05	3.44	.13	.56	.53	.17	.84	5.67	7.24	1.57	3.89
117	2.31	--	.92	.03	3.26	.74	.26	.48	.03	.60	5.37	6.59	1.22	2.43
114	1.71	.11	1.39	.06	3.27	--	.69	.32	.45	.99	5.72	6.79	1.07	3.45
104	2.13	.22	1.43	.01	3.79	.56	.17	.41	.23	.80	5.96	7.11	1.15	2.95
102	2.77	.45	.83	.03	4.08	.11	.96	.85	.10	.84	6.94	8.07	1.13	2.94
148	3.75	--	1.17	.10	5.02	.44	.16	.39	.16	.79	6.96	8.16	1.20	2.15
106	1.91	.17	1.32	.02	3.42	.67	.29	.37	.14	.73	5.62	6.49	.87	2.48
107	3.00	.11	1.08	.02	4.21	.59	.69	.52	.21	.87	7.09	7.42	.85*	2.91
157	3.03	.01	.76	.02	3.82	.25	.30	.35	.24	1.05	6.01	6.48	.47	2.29
115	3.00	.30	2.08	.06	5.44	.71	.14	.52	.12	.83	7.76	7.82	.07*	2.33
103	4.11	--	1.63	.01	5.75	.65	.35	.43	.06	.79	8.03	6.80	- 1.23	.38
H1 10	1.84	.11	1.18	.04	3.17	.37	.25	.40	.14	.70	5.03	7.35	2.35*	3.70
Low 9	2.72	.17	1.40	.03	4.32	.51	.38	.45	.18	.83	6.62	7.22	.63*	2.44
Av. All	2.25	.14	1.28	.04	3.71	.44	.29	.43	.15	.76	5.78	7.29	1.54*	3.11

Costs of production per hundredweight depend upon the relationship between the costs per animal unit and the pounds of beef produced per animal unit. Low costs per animal unit coupled with relatively high production will result in low costs of production per hundredweight. No. 111, for example, had much lower average costs per animal unit, as shown in Table 10, and at the same time had higher than average production per animal unit, resulting in a total cost of only \$3.25 per hundredweight. No. 103, on the other hand, had much higher than average total costs and less than average production, resulting in a total cost per hundredweight of \$8.03. The average value per hundredweight produced would be somewhat different than the average price of stock sold during the current year, since it takes into account changes in inventory and stock bought, as explained in Table 7.

* Management incomes marked with an asterisk are larger than the difference between value of beef produced and total cost of production by the amount of miscellaneous income.

Table 12 - General Summary of Individual Beef Records on a Breeding Cow Basis - 1940

Serial Number	Animal units per cow	Calves raised per 100 cows	Pounds beef prod. per cow	All Stock Sold			Stock sold per cow	Stock bought per cow	Value Produced per cow	Expense or production Per cow	Management income per cow	Labor income per cow	Farm income per cow (beef)	Total farm income per cow
				Av. Wt. Per Head	Av. Value Per Hd.	Av. Price per cwt.								
111	2.1	92.6	733	594	53.08	8.93	62.22	4.53	59.25	23.85	35.40	36.60	41.04	42.52
147	1.9	87.4	757	871	77.86	8.94	68.54	1.29	65.60	47.01	18.59	20.46	24.54	27.64
141	1.8	75.3	539	790	61.39	7.77	54.49	--	46.40	29.80	16.60	19.03	24.08	30.82
154	2.3	83.3	712	973	80.07	8.23	56.19	8.57	57.27	39.71	17.56	18.82	24.15	24.59
113	1.7	84.1	550	827	62.14	7.51	30.49	2.21	38.03	24.62	13.41	14.45	18.22	20.46
116	2.1	69.6	594	781	59.39	7.61	49.42	1.80	43.46	27.94	15.52	17.68	21.74	24.12
110	1.5	92.0	401	377	31.96	8.47	24.89	--	29.75	22.21	7.54	9.74	13.11	16.25
140	2.5	70.2	653	960	64.71	6.74	44.69	2.97	43.39	30.77	12.62	13.76	19.73	21.06
153	1.8	78.1	501	663	50.60	7.63	37.43	--	36.30	28.41	7.89	10.71	14.91	19.53
117	2.0	71.5	654	974	70.88	7.28	36.23	7.04	43.08	35.10	7.98	9.65	13.55	15.85
114	1.9	89.7	675	900	65.02	7.22	38.34	1.28	45.84	38.60	7.24	11.86	18.54	23.28
104	1.8	80.7	541	849	61.12	7.20	37.68	--	38.49	32.27	6.22	7.16	11.50	15.97
102	1.3	80.0	382	522	42.67	8.18	34.59	4.78	30.84	26.51	4.33	8.01	11.23	11.24
148	2.0	54.1	526	911	73.11	8.03	49.46	1.77	42.96	36.62	6.34	7.19	11.33	11.33
106	1.7	75.1	519	772	56.91	7.39	24.47	1.21	33.67	29.19	4.48	5.98	9.78	12.87
107	1.7	68.1	499	776	52.70	6.79	45.61	--	37.04	32.80	4.24	7.69	12.04	14.53
157	2.0	71.6	561	1006	78.59	7.80	24.63	3.49	36.35	33.73	2.62	4.30	10.19	12.83
115	2.0	67.5	520	808	59.38	7.35	45.70	2.37	40.69	40.31	.38	1.12	5.44	12.15
103	1.9	79.2	536	862	65.74	7.63	26.47	--	36.44	43.06	6.62	4.71	.48	2.04
Hi. 10	2.0	79.6	617	805	62.56	7.77	43.81	3.20	45.34	30.87	14.47	16.04	20.38	22.86
Low 9	1.8	73.6	520	795	59.28	7.46	36.30	1.59	37.59	34.29	3.30	5.02	9.34	12.69
Av. ALL	1.9	76.5	567	800	60.98	7.62	39.95	2.37	41.35	32.63	8.72	10.37	14.70	17.63

Table 12 gives a general summary of individual records, comparing costs, income, earnings, and related factors, on a breeding cow basis. Due to the fact that the number of animal units per breeding cow generally varies considerably between different ranches, it is difficult to draw significant conclusions from figures shown on a per cow basis. This table is designed primarily for individual cooperators' use. The average number of animal units per cow for records in this year's study varied from 1.3 for No. 102, who sold mainly calves, up to 2.5 for No. 140, who sold mainly steers over three years old, as shown in Table 8. The calving percentage, as indicated by the number of calves raised per 100 cows is of particular significance. Two of the cooperators in the more profitable group obtained better than a 90 per cent half crop, while No. 148 in the less profitable group averaged only a little over 50 per cent. Average weights and selling prices of all stock sold are also compared in this table. The average weights per head sold varied from a low of 377 pounds for No. 110, who sold mainly calves, up to 1006 pounds for No. 147, who sold principally steers two to three years old.