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FEDERAL CATTLE COSTS AND RETURNS

1940-1949

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UNIVERSITY OF MINNESOTA

Department of Agriculture

Division of Agricultural Economics
and the
Agricultural Extension Service

and the

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FEEDER CATTLE COST AND RETURNS
1940-1949

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INTRODUCTION

Feeding beef cattle is an important enterprise on many farms in Minnesota. The purpose of this report is to present data on the costs and returns from this type of feeding operation and to illustrate the type of information which can be secured from farm records. These data were secured from the records of the Farm Management Services operating in the southern part of the state.

The facts presented in this report differ from that in the annual reports prepared for the Farm Management Services in that all the information is on a "lot" basis beginning with the time of purchase and continuing until the animals are sold. The data presented annually are on a calendar year basis. This usually results in combining portions of the feeding periods for different lots of cattle in one report. These data by lots as included in this report represents results from feeding cattle under ordinary farm conditions. They should be helpful to individual farmers for comparison with their own accomplishment or for the purpose of planning their feeding operations. Although the farmers included in this study are, in general, above average in managerial ability, the quantity of feed required to produce 100 pounds gain in weight represents an accomplishment well within the grasp of most farmers.

Each enterprise statement for cattle shows the quantity and market value of feeds consumed per 100 pounds net gain in weight, the financial returns, and other information on rates of production. The enterprise statements also show the amount by which the total return from the feeding operations exceeds the feed cost. Three measures of "return above feed cost" are shown: (1) the return above feed cost per 100 pounds net gain in weight, (2) return above feed cost per head (calculated for the two feeding periods 1947-1949 only),

and (3) the return per \$100 of feed. It must be understood that in none of these cases is it a "net return". In addition, there are other costs such as labor, power, shelter, taxes, insurance, interest, equipment, and other items that must be met from the gross income. However, feed is the largest single item and may constitute up to 75 per cent or more of the total cost of fattening cattle.

The farm-raised feeds were valued at average prices at the farm. The feeds were valued at the price the farmer paid for them. Feeds for which there is no regularly established market price, such as corn silage, were valued on the basis of their feeding value relative to similar feeds for which a market price was available. The amount of straw used for feed was so small that it is not included in either the quantity or value of feeds. Quantities of feed with the exception of pasture, are given in terms of pounds rather than bushels or tons. All corn has been reduced to a shelled corn basis, that is 56 pounds per bushel.

The net increase in value is calculated by subtracting the value of the purchases from the value of the sales. Animals transferred into a lot were handled as a purchase and animals transferred out or slaughtered for home use were handled as a sale. The pounds produced is determined in a manner similar to the method of calculating net value increases.

The number of days on the farm represents the average time on the farm and is secured by calculating the total number of "cattle days" and dividing by the number of head sold.

Arithmetic averages are used throughout this report. Equal weight is given to the data from each lot regardless of the number of animals fed. Wherever nine-year averages are given, they represent arithmetic averages giving each year equal weight.

TOTAL FEED COSTS AND RETURNS FROM THE CATTLE FEEDING ENTERPRISE

The average return above feed cost per lot for the three feeding periods 1946-1949 is presented in table 1. The "return above feed cost" must cover the expense to labor, power, shelter, insurance, and other miscellaneous items of cost. Whatever is left after these expense items are covered is the "net" to the operator. These data give some indication as to the average size of the feeding operation and the contribution the enterprise makes to the farmers' income.

Table 1. Average Return Above Feed Cost Per Lot, 1946-1949

Item	Your lot	Average of all lots
		1946-1947
Number of lots		20
Total Returns		\$6425
Total Feed Cost	_____	4924
Return Above Feed Cost	_____	1501
		1947-1948
Number of lots		23
Total Returns		\$7065
Total Feed Cost	_____	4878
Return Above Feed Cost	_____	2187
		1948-1949
Number of lots		32
Total Returns		\$4401
Total Feed Cost	_____	3668
Return Above Feed Cost	_____	733

COSTS AND RETURNS PER 100 POUNDS NET GAIN IN WEIGHT

A statement for each of the four feeding periods 1945-1949 is presented in tables 2 to 5. These statements show the average return above feed cost and other related data for all lots. Included are the averages of the one-third of the lots high in return above feed cost and the one-third low in return above feed cost. Averages for each of the nine feeding periods are shown in table 6.

The average length of feeding period was 212 days for the 206 lots studied. The feeding period ranged from 60 to 455 days.

The average weight per head purchased ranged from 350 pounds for one lot to 1025 pounds for another with an average purchased weight of 641 pounds per head. While this is a wide range, there is no indication that the purchase weight of the cattle fed had any effect on the return above feed.

Corn, legume hay, and silage were the principal feeds utilized. Silage was fed to 145 of the 206 lots studied. 75 of the 206 lots had some pasture. There has been some increase in pasture use in the more recent feeding periods. During the last three periods, 1946-1949, 36 of the 75 lots had access to pasture. The days on pasture ranged from 6 to 182 days with an average of 64 days for the 36 lots.

Table 2. Cost and Returns, 1945-1946 Feeding Period

Items	Your farm	Average of 22 lots	7 lots highest in return above feed	7 lots lowest in return above feed
Feeds per cwt net gain in wt, lbs:				
Corn	_____	757	623	960
Small grain	_____	32	25	2
Commercial feeds	_____	49	45	58
Legume hay	_____	258	290	313
Other hay	_____	96	69	173
Fodder and stover	_____	14	18	-
Total concentrates	_____	838	693	1020
Total hay and fodder	_____	368	377	486
Silage	_____	402	328	277
Pasture days	_____	6	7	5
Total digestible nutrients*	_____	930	805	1118
% TDN that is protein	_____	11.7	12.3	11.5
Feed costs per cwt net gain in wt:				
Concentrates	_____	\$14.90	\$12.02	\$17.65
Roughages	_____	3.34	3.36	3.63
Pasture	_____	.25	.28	.22
Total feed costs	_____	\$18.49	\$15.66	\$21.50
Net increase in value per cwt	_____	\$25.59	\$28.59	\$22.65
Return above feed cost per cwt	_____	\$ 7.10	\$12.93	\$ 1.15
Return for \$100 feed	_____	\$138	\$183	\$105
Purchase price per cwt	_____	\$12.90	\$13.21	\$12.68
Sale price per cwt	_____	\$16.75	\$18.01	\$15.04
Price spread	_____	\$ 3.85	\$ 4.80	\$ 2.36
Wt per head bot, lbs	_____	709	740	708
Wt per head sold, lbs	_____	1043	1082	976
Total gain per head, lbs	_____	334	342	268
Daily gain per head, lbs	_____	1.7	1.7	1.5
Number of days on farm	_____	200	206	177
Number of days on pasture	_____	20	20	14
Number of head bot per lot	_____	60	62	55
Per cent death loss	_____	1.4	.7	1.7
Net gain in wt, lbs	_____	19,757	22,154	13,896

* Not including nutrients received from pasture.

Table 3. Cost and Returns, 1946-1947 Feeding Period

Items	Your farm	Average of 20 lots	7 lots highest in return above feed	7 lots lowest in return above feed
Feeds per cwt net gain in wt, lbs:				
Corn	_____	841	547	1298
Small grain	_____	44	28	63
Commercial feeds	_____	43	41	43
Legume hay	_____	231	202	255
Other hay	_____	93	99	118
Fodder and stover	_____	33	-	-
Total concentrates	_____	928	616	1404
Total hay and fodder	_____	357	301	373
Silage	_____	391	217	436
Pasture days	_____	13	18	11
Total digestible nutrients*	_____	992	683	1395
% TDN that is protein	_____	11.3	11.6	10.7
Feed costs per cwt net gain in wt:				
Concentrates	_____	\$25.29	\$16.75	\$37.81
Roughages	_____	4.45	3.75	5.08
Pasture	_____	.60	.91	.52
Total feed costs	_____	\$30.34	\$21.41	\$43.41
Net increase in value per cwt	_____	\$39.59	\$45.45	\$35.58
Return above feed cost per cwt	_____	\$ 9.25	\$24.04	\$-7.83
Return for \$100 feed	_____	\$130	\$212	\$ 82
Purchase price per cwt	_____	\$16.35	\$17.78	\$15.57
Sale price per cwt	_____	\$23.45	\$27.00	\$20.59
Price spread	_____	\$ 7.10	\$ 9.22	\$ 5.02
Wt per head bot, lbs	_____	635	597	712
Wt per head sold, lbs	_____	927	925	948
Total gain per head, lbs	_____	292	328	236
Daily gain per head, lbs	_____	1.5	1.5	1.5
Number of days on farm	_____	191	225	159
Number of days on pasture	_____	34	53	29
Number of head bot per lot	_____	53	78	45
Per cent death loss	_____	1.0	.6	1.4
Net gain in wt, lbs	_____	16,229	27,928	10,118

*Not including nutrients received from pasture.

Table 4. Cost and Returns, 1947-1948 Feeding Period

Item	Your farm	Average of 23 lots	8 lots highest in return above feed	8 lots lowest in return above feed
Feeds per cwt net gain in wt, lbs:				
Corn	_____	621	581	819
Small grain	_____	38	23	46
Commercial feeds	_____	55	46	58
Legume hay	_____	221	365	116
Other hay	_____	140	105	162
Fodder and stover	_____	-	-	-
Total concentrates	_____	714	650	923
Total hay and fodder	_____	361	470	278
Silage	_____	626	498	879
Pasture days	_____	11	7	12
Total digestible nutrients*	_____	885	849	879
% TDN that is protein	_____	12.1	12.9	11.0
Feed costs per cwt net gain in wt:				
Concentrates	_____	\$26.19	\$22.68	\$31.61
Roughages	_____	4.87	5.40	4.80
Pasture	_____	.47	.25	.57
Total feed costs	_____	\$31.53	\$28.33	\$36.98
Net increase in value per cwt	_____	\$45.67	\$53.39	\$41.08
Return above feed cost per cwt	_____	\$14.14	\$25.06	\$ 4.10
Return for \$100 feed	_____	\$145	\$188	\$111
Purchase price per cwt	_____	\$20.97	\$19.87	\$20.75
Sale price per cwt	_____	\$29.47	\$31.74	\$26.98
Price spread	_____	\$ 8.50	\$11.87	\$ 6.23
Wt per head bot, lbs	_____	628	618	661
Wt per head sold, lbs	_____	975	998	968
Total gain per head, lbs	_____	347	380	307
Daily gain per head, lbs	_____	1.5	1.5	1.5
Number of days on farm	_____	233	261	207
Number of days on pasture	_____	35	26	40
Number of head bot per lot	_____	47	51	40
Per cent death loss	_____	.5	1.1	.4
Net gain in wt, lbs	_____	15,470	17,892	11,917

* Not including nutrients received from pasture.

Table 5. Cost and Returns, 1948-1949 Feeding Period

Items	Your farm	Average of 32 lots	11 lots highest in return above feed	11 lots lowest in return above feed
Feeds per cwt net gain in wt, lbs:				
Corn	_____	684	499	923
Small grain	_____	47	35	91
Commercial feeds	_____	56	48	64
Legume hay	_____	238	112	360
Other hay	_____	88	67	114
Fodder and stover	_____	-	-	-
Total concentrates	_____	787	582	1078
Total hay and fodder	_____	326	179	474
Silage	_____	446	437	442
Pasture days	_____	6	3	5
Total digestible nutrients*	_____	874	629	1181
% TDN that is protein	_____	12.0	11.8	12.4
Feed costs per cwt net gain in wt:				
Concentrates	_____	\$16.67	\$12.93	\$22.48
Roughages	_____	4.15	2.85	5.46
Pasture	_____	.31	.23	.24
Total feed costs	_____	\$21.13	\$16.01	\$28.18
Net increase in value per cwt	_____	\$25.35	\$28.15	\$22.18
Return above feed cost per cwt	_____	\$ 4.22	\$12.14	\$-6.00
Return for \$100 feed	_____	\$120	\$176	\$ 79
Purchase price per cwt	_____	\$25.69	\$24.50	\$26.64
Sale price per cwt	_____	\$25.24	\$25.28	\$24.97
Price spread	_____	\$ -.45	\$.78	\$-1.67
Wt per head bot, lbs	_____	611	490	681
Wt per head sold, lbs	_____	1032	896	1079
Total gain per head, lbs	_____	421	406	398
Daily gain per head, lbs	_____	1.7	1.7	1.6
Number of days on farm	_____	254	245	243
Number of days on pasture	_____	25	20	21
Number of head bot per lot	_____	42	38	46
Per cent death loss	_____	1.9	.7	3.3
Net gain in wt, lbs	_____	17,359	15,177	17,690

* Not including nutrients received from pasture.

Table 6. Average Costs and Returns, 1940-1949

Items	1940- 1941	1941- 1942	1942- 1943	1943- 1944
1 Number of lots	26	22	16	15
Feeds per cwt net gain in wt, lbs:				
2 Corn	575	912	911	747
3 Small grain	159	23	41	27
4 Commercial feeds	24	51	49	46
5 Legume hay	171	199	315	268
6 Other hay	65	55	92	37
7 Fodder and stover	42	47	68	17
8 Total concentrates	758	986	1001	820
9 Total hay and fodder	278	301	475	322
10 Silage	600	491	309	591
11 Pasture days	7	3	4	4
12 Total digestible nutrients*	841	995	1097	924
13 % T.D.M. that is protein	11.1	11.1	11.6	11.5
Feed costs per cwt net gain in wt				
14 Concentrates	\$6.41	\$11.55	\$15.27	\$15.08
15 Roughages	1.62	1.42	2.35	3.38
16 Pasture	.23	.10	.12	.17
17 Total feed costs	\$8.26	\$13.07	\$17.74	\$18.63
18 Net increase in value per cwt	\$11.67	\$18.05	\$18.25	\$21.48
19 Return above feed cost per cwt	\$ 3.41	\$ 4.98	\$.51	\$ 2.85
20 Return for \$100 feed	\$141	\$138	\$103	\$115
21 Purchase price per cwt	\$ 8.32	\$10.10	\$12.27	\$10.82
22 Sale price per cwt	\$ 9.52	\$12.52	\$13.94	\$14.22
23 Price spread	\$ 1.20	\$ 2.42	\$ 1.67	\$ 3.40
24 Wt per head bot, lbs	566	702	658	615
25 Wt per head sold, lbs	922	1045	968	929
26 Total gain per head, lbs	356	343	310	314
27 Daily gain per head, lbs	1.6	1.7	1.6	1.6
28 Number of days on farm	222	203	197	195
29 Number of days on pasture	25	10	12	13
30 Number of head bot per lot	26	43	45	38
31 Per cent death loss	1.2	1.1	1.3	.8
32 Net gain in wt, lbs	9,840	15,751	13,508	11,593

*Not including nutrients received from pasture

Table 6. (con't)

Items	1944- 1945	1945- 1946	1946- 1947	1947- 1948	1948- 1949	Avg of 9 feed- ing periods 1940-1949
1	30	22	20	23	32	206
2	783	757	841	621	684	759
3	16	32	44	38	47	47
4	42	49	43	55	56	46
5	151	258	231	221	238	228
6	50	96	93	140	88	80
7	59	14	33	-	-	31
8	841	838	928	714	787	852
9	260	368	357	361	326	339
10	358	402	391	626	446	468
11	5	6	13	11	6	6
12	869	930	992	855	874	930
13	11.2	11.7	11.3	12.1	12.0	11.5
14	\$13.35	\$14.90	\$25.29	\$26.19	\$16.67	\$16.08
15	2.32	3.34	4.45	4.87	4.15	3.10
16	.19	.25	.60	.47	.31	.27
17	\$15.86	\$18.49	\$30.34	\$31.53	\$21.13	\$19.45
18	\$22.42	\$25.59	\$39.59	\$45.67	\$25.35	\$25.34
19	\$ 6.56	\$ 7.10	\$ 9.25	\$14.14	\$ 4.22	\$ 5.89
20	\$141	\$138	\$130	\$145	\$120	\$130
21	\$11.49	\$12.90	\$16.35	\$20.97	\$25.69	\$14.32
22	\$15.17	\$16.75	\$23.45	\$29.47	\$25.24	\$17.81
23	\$ 3.68	\$ 3.85	\$ 7.10	\$ 8.50	\$ -.45	\$ 3.49
24	651	709	635	628	611	641
25	1001	1043	927	975	1032	982
26	350	334	292	347	421	341
27	1.7	1.7	1.5	1.5	1.7	1.6
28	211	200	191	233	254	212
29	18	20	34	35	25	21
30	50	60	53	47	42	45
31	.6	1.4	1.0	.5	1.9	1.1
32	17,729	19,757	16,229	15,470	17,359	15,248

COST AND RETURNS PER HEAD

The costs and returns per head of cattle for the two feeding periods, 1947-1948 and 1948-1949 are presented in table 7. These data cover the same lots of cattle as those in tables 4 and 5 but the information in this table has been presented on a per head basis rather than on a lot basis

Table 7. Feeder Cattle Cost and Returns Per Head, 1947-1949

	1947-1948			1948-1949		
	Avg 23 lots	8 lots high in return above feed cost	8 lots low in return above feed cost	Avg 32 lots	11 lots high in return above feed cost	11 lots low in return above feed cost
Feeds per head, lbs:						
Corn	2155	2208	2514	2880	2026	3674
Small grain	132	87	141	198	142	362
Commercial feeds	191	175	178	236	195	255
Legume hay	767	1387	356	1002	455	1433
Other hay	486	399	497	370	272	454
Total Concentrates, lbs	2478	2470	2833	3314	2363	4291
Total Hay and Fodder, lbs	1253	1786	853	1372	727	1887
Silage, lbs	2172	1892	2699	1878	1774	1759
Pounds TDN per Head	2967	3226	2699	3680	2554	4700
Feed Costs per Head:						
Concentrates	\$90.88	\$86.18	\$97.04	\$70.18	\$52.50	\$89.47
Roughages	16.90	20.52	14.74	17.47	11.57	21.73
Pasture	1.63	.95	1.75	1.31	.93	.96
Total Feed Cost	\$109.41	\$107.65	\$113.53	\$ 88.96	\$ 65.00	\$112.16
Net increase in value per head	\$158.47	\$202.88	\$126.12	\$106.12	\$114.30	\$ 88.28
Return above feed cost per head	\$ 49.06	\$ 95.23	\$ 12.59	\$ 17.76	\$ 49.30	\$-23.88
Return for \$100 Feed	\$ 145	\$ 188	\$ 111	\$ 120	\$ 176	\$ 79
Purchase price per head	\$131.69	\$122.80	\$137.16	\$156.97	\$120.05	\$181.42
Sale price per head	290.16	325.68	263.28	263.69	234.35	269.70

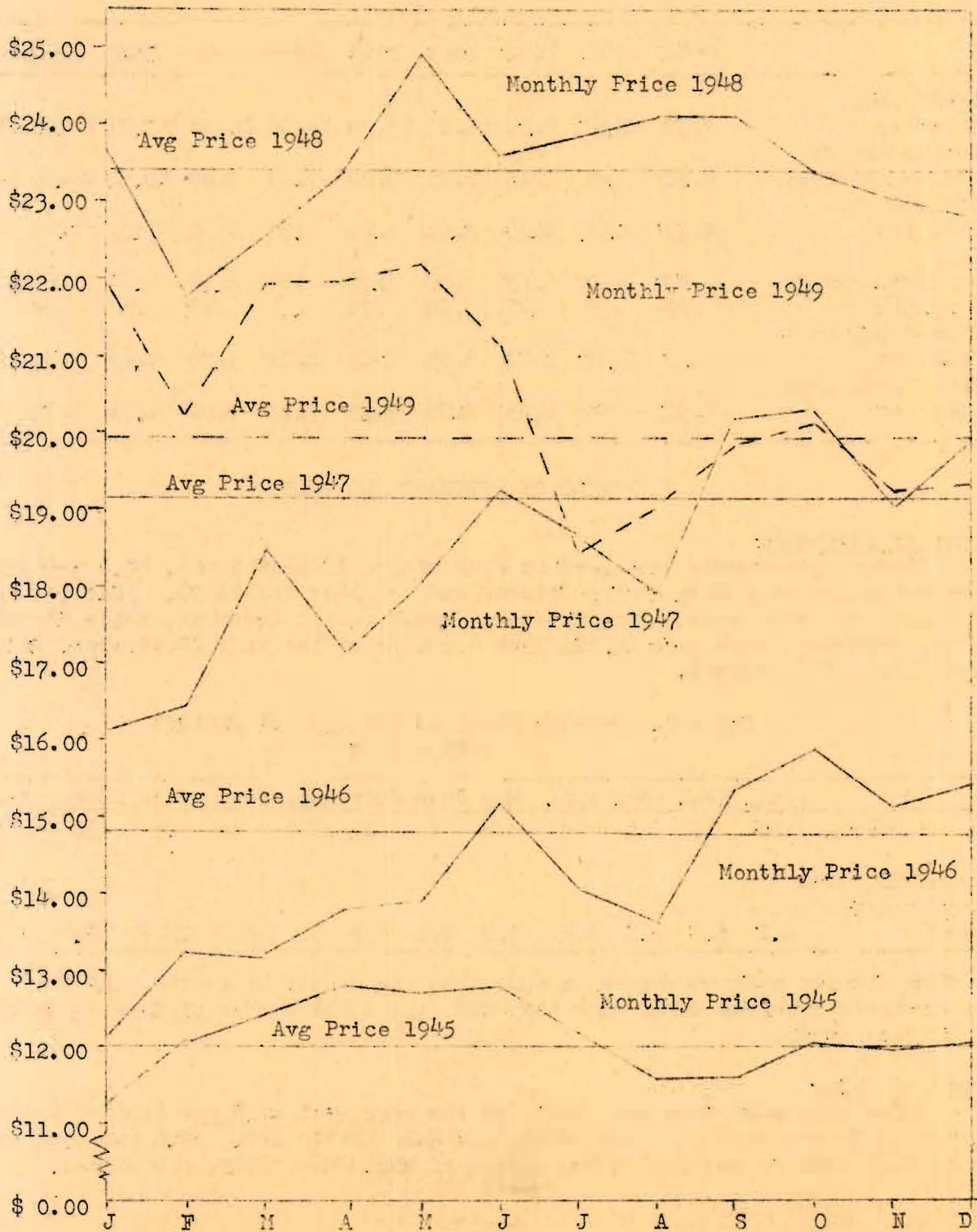
MINNESOTA PRICES

The average annual price for selected feeds is shown in table 8. These prices are for southern Minnesota and cover the 10-year period 1940-1949.

Stocker and feeder cattle prices at South St. Paul are presented in figure 1. These stocker and feeder cattle prices at South St. Paul are representative of the relative price situation regardless of the place of purchase.

All the feed stuffs have experienced large price changes in the past ten years. The post-war rise in cattle prices has been pronounced. Since, in most cases, stocker and feeder cattle and certain of the feeds represent cash costs and the value of farm raised feeds that are fed to feeder cattle must be allocated

Figure 1. Average Monthly and Yearly Prices - Stockers and Feeders So. St. Paul, 1945-1949 ^{1/}



^{1/} Compiled from Livestock, Meats, and Wool Market Statistics and Related Data, 1945-1949.

to that enterprise as a cost, these fluctuations greatly influence the total costs in any one year as compared to another. This variation in prices from year to year is one of the factors responsible for the yearly fluctuations in the income received from the enterprise. Yearly differences in gross income or returns over a period of years are not generally within the control of the individual farmer.

Table 8. Average Annual Feed Prices

	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
Alfalfa hay, per ton	7.50	8.50	8.00	11.00	15.00	15.00	16.00	22.00	20.00	20.00
Timothy and/or brome, per ton	4.82	5.45	5.15	6.75	9.00	9.00	9.60	12.50	11.60	11.60
Corn silage, per ton	2.12	2.55	2.75	3.62	5.00	5.00	5.50	8.00	5.85	6.00
Bar corn, per bu	.42	.50	.65	.88	.90	.84	1.14	1.54	1.64	1.02
Oats, per bu	..26	.32	.41	.60	.70	.64	.70	.90	.88	.59
Linseed oil meal, per cwt	1.72	2.02	2.42	2.55	2.85	2.88	3.30	4.25	4.55	4.00
Soybean oil meal, per cwt	1.72	2.10	2.75	2.82	3.15	3.00	3.80	4.80	5.10	4.05

PERIOD OF PURCHASE AND SALE

Month of Purchase:

Feeder cattle were purchased in each of the 12 months with 47.1 per cent of the purchases being made during October and November (table 9). 58.8 per cent of the purchases were made during October, November, and December, while 68 per cent of the purchases were made in the last 4 months of the year (September, October, November, and December).

Table 9. Average Month of Purchase of Cattle*
1940 - 1949

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. of purch.	26	10	5	5	6	6	17	16	26	81	52	33
% monthly total is of yearly total	9.2	3.5	1.8	1.8	1.8	2.1	6.0	5.7	9.2	28.7	18.4	11.7

* Some farmers made purchases in more than one month; hence the number of purchases recorded total more than 206, the total number of lots included in this study.

Month of Sale:

Sales were made in every month of the year with 42.4 per cent of the sales occurring in the months of May, June, and July (table 10). 53.5 per cent of the sales were made in the four month period of May, June, July, and August.

Table 10. Average Month of Sale of Cattle*
1940-1949

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. of purch.	24	26	36	43	60	62	51	45	24	13	9	14
% monthly total is of yearly total	5.9	6.4	8.8	10.6	14.7	15.2	12.5	11.1	5.9	3.2	3.2	2.4

* Some farmers made sales in more than one month; hence the number of sales recorded totals more than 206.

RANGE IN RETURN ABOVE FEED COST

The range in return above feed cost per 100 pounds net gain in weight for the nine-year period 1940-1949 between the one-third of the lots high in return above feed and the low one-third was \$14.08 (table 11). When the range in return above feed cost between the high one-third of the lots and the low one-third is determined on a per head basis, the same relationships appear (table 12). These differences in the returns received by farmers from year to year are due primarily to changes in the general price levels, and are not generally within his control. The variation among lots in any one year are to a large extent within the control of the farmer. Some of the major factors causing this variation among lots are discussed in the following paragraphs.

Table 11. Range in Return Above Feed Cost from Cattle per 100 Pounds
Net Gain in Weight, 1940-1949

Year	1/3 highest in return above feed	Average	1/3 lowest in return above feed	Range
1940-1941	\$ 6.29	\$ 3.41	\$.66	\$ 5.63
1941-1942	8.21	4.98	2.41	5.80
1942-1943	5.77	.51	-4.76	10.53
1943-1944	9.43	2.85	-3.40	12.83
1944-1945	10.73	6.56	1.56	9.17
1945-1946	12.93	7.10	1.15	11.78
1946-1947	24.04	9.25	-7.83	31.87
1947-1948	25.06	14.14	4.10	20.96
1948-1949	12.14	4.22	-6.00	18.14
Average of 9 yrs	12.73	5.89	-1.35	14.08

Table 12. Range in Return Above Feed Cost per Head of Cattle
1940-1949

Year	1/3 highest in return above feed	Average	1/3 lowest in return above feed	Range
1940-1941	\$22.83	\$12.14	\$ 2.03	\$20.80
1941-1942	32.68	17.03	7.69	24.99
1942-1943	16.79	1.56	-14.14	30.93
1943-1944	29.04	8.95	-10.68	39.72
1944-1945	38.52	22.96	4.72	33.80
1945-1946	44.22	23.71	3.08	41.14
1946-1947	78.85	27.01	-18.48	97.33
1947-1948	95.23	49.07	12.59	82.64
1948-1949	49.30	17.76	-23.88	73.18
Average of 9 yrs	45.27	20.02	- 4.12	49.39

RELATION OF FEED COST TO RETURN ABOVE FEED COST

One of the important factors affecting the return above feed cost from the lots studied was the cost of feed. The cost of the feed has been expressed in two ways: (1) the cost of the feed required to produce 100 pounds net gain in weight, and (2) the cost of the feed required for one animal from time of purchase to time of sale. The one-third of the operators low in feed cost produced 100 pounds of beef for \$15.62 and sent one animal to market at a feed cost of \$58.89 (table 13). The one-third of the operators high in feed cost spent \$24.34 in producing 100 pounds of beef while the feed cost per head was \$73.75. The difference between the high and the low groups in the cost of feed was \$8.72 per 100 pounds of beef produced or \$14.86 per head marketed.

The relationship between feed cost and return above feed is very marked. The one-third of the lots low in feed cost realized a return above feed of \$8.73 per 100 pounds net gain in weight as compared to \$2.21 for the one-third of the lots high in feed cost. The return above feed on a per head basis was \$32.91 for the lots low in feed cost and \$6.70 for the lots high in feed cost. With an average production of 15,248 pounds of beef per lot, this is a difference of \$994 per lot.

RELATION OF PRICE SPREAD TO RETURN ABOVE FEED COST

The spread between the purchase and sale price is generally recognized as having an important influence on profits from cattle feeding. In fact, in many reports on cattle feeding operations, price spread is considered the most important factor affecting profits. The difference in return above feed between the one-third of the lots with a wide price spread and the one-third of the lots with a narrow price spread was \$9.46 per 100 pounds net gain in weight (table 14). This is a total difference of \$1,442 per lot for the average production of 15,248 pounds per lot.

Table 13. Relation of Feed Cost per 100 lbs Net Gain in Weight, per Head, and per Lot, to Various Beef Cattle Production Factors, 1940-1949.

	Avg 1/3 low in feed cost	Avg middle 1/3 in feed cost	Avg 1/3 high in feed cost
	100 lbs Net Gain in Weight		
Feed cost	\$15.62	\$18.29	\$24.34
Net increase	24.35	25.16	26.55
Return over feed	8.73	6.87	2.21
Avg price of cattle bot, per cwt	14.66	14.21	14.13
Avg price of cattle sold, per cwt	18.01	17.78	17.66
Price spread, per cwt	3.35	3.57	3.53
Concentrates fed, lbs	650	772	1132
Roughage fed, lbs	267	349	400
Silage fed, lbs	444	532	421
TDN fed, lbs	705	900	1185
	Per Head		
Feed cost	\$58.89	\$62.92	\$73.75
Net increase	91.80	86.55	80.45
Return over feed	32.91	23.63	6.70
Sale price per head	172.72	173.89	178.54
Purchase price per head	85.32	90.09	100.04
Concentrates fed, lbs	2451	2656	3430
Roughages fed, lbs	1007	1201	1212
Silage fed, lbs	1674	1830	1276
TDN fed, lbs	2658	3096	3591
	Per Lot		
% protein in ration	11.5	11.7	11.5
No. of head per lot	41	51	43
Wt per head bought	582	634	708
Wt per head sold	959	978	1011
Total gain per head, lbs	377	344	303
Daily gain per head, lbs	1.6	1.5	1.5
Days on farm	229	225	199
Days on pasture	30	44	23
% death loss	.8	.8	1.7

Table 14. Relation of Price Spread to Various Beef Cattle Production Factors, 1940-1949

	Avg of one-third with wide price spread	Avg of middle one-third	Avg of one-third with narrow price spread
Price spread, per cwt*	\$ 5.32	\$ 3.44	\$ 1.67
Return over feed, per cwt*	10.55	6.06	1.09
Total feed cost, per cwt*	18.36	19.05	20.90
TDN fed, lbs	869	930	992
Average purchase price per cwt	13.72	14.09	15.17
Average sale price per cwt	19.04	17.53	16.84
Average wt per head bought	633	626	663
Average wt per head sold	1002	966	975
Number days on farm	229	210	195
Number head per lot	57	37	41

* Per 100 pounds net gain in weight.

CUMULATIVE EFFECT OF EXCELLING IN A NUMBER OF MANAGEMENT FACTORS

The return above feed cost and the profit of the feeding enterprise is affected by a number of management factors. Because of the interrelation among these factors and the effect of the interrelation on the profitableness of the enterprise it is difficult to measure the effect of each factor separately. Two of the factors have already been discussed--feed cost and price spread. Others for which data are available from this study are: (1) rate of daily gain, (2) per cent protein in the ration, and (3) death loss. Although the individual effect of each has not been measured separately, the cumulative effect of these five factors on returns is shown in figure 2.

No. of factors in which farmers excelled	No. of lots	Average Return Over Feed Cost from Cattle per 100 Pounds Net Gain in Weight 1940-1949						
		\$-2	\$0	\$2	\$4	\$6	\$8	\$10
None or 1	28							\$-1.95
2	49							3.23
3	67							7.22
4 or 5	62							9.90

Figure 2. Average return over feed cost from cattle per 100 pounds net gain in weight grouped according to number of selected factors in which farmers excelled, 1940-1949.

Some farmers excelled in nearly all the factors while others were below the average of the group in most of them. The 62 farmers who excelled in four or five factors received a return above feed cost of \$9.90 per 100 pounds net gain in weight. The 28 farmers who were below the average in all or above in only one factor did not receive a return sufficiently large to cover the cost of the feed for their lots of cattle. The difference between the extremes amounts to \$11.85 per 100 pounds net gain in weight. This is a difference of \$1,806 for the average production of 15,248 pounds of beef per lot. These five factors alone are responsible for a considerable proportion of the variation among these farmers in the return above feed cost secured from feeding cattle.

USING RECORDS TO INCREASE RETURNS

The data presented in this report represent facts from well kept records. They point out ranges and averages that may be of use to all farmers feeding cattle. They point out some of the factors that affect the profitability of the enterprise. They will be most valuable, however, to the farmer who has records and can use them to compare facts about his feeding operations with that presented here.

It is only by keeping and studying a set of complete and accurate records that a farmer can determine where his management is weak or strong and where improvement needs to be made to secure maximum returns from each enterprise as well as from the entire farm business. A farmer may know fairly well the price spread, daily gain and other information about his business but unless he records these from year to year, the facts are likely soon to be forgotten. Without some financial records, he has only a general idea of his gross returns and without feed records, little information relative to feed costs.

Keeping a set of farm records does not in itself insure a profitable farm business. These records must be carefully studied and analyzed before they can be effective in increasing earnings. The farmer who carefully compares his results with those of other farmers as well as those secured in experimental trials has a definite and valuable means for measuring his own success. He can find where his weakness lies and where he must center his efforts for improvement. Records are especially valuable in keeping the farm business adjusted to changing economic conditions. The hours the farmer spends on his records are likely to be most liberally rewarded of any time he spends on his farm business.