

Beef Enterprise Survey: 1996 - 1998

KENTUCKY FARM BUSINESS MANAGEMENT PROGRAM

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A Special Note to Our Readers

The data for this study are drawn from the detailed financial records of producers cooperating with the Kentucky Farm Business Management Program. The data are not drawn from a random sample of farms in the state. However, these data are the most accurate and detailed farm financial information available and represent the closest approximation to “real world” farm financial data which are available to researchers and educators. Every attempt has been made to select a set of farms for these research studies which are “typical” and have complete financial information available for analysis. These data are carefully cross-checked by our farm management specialists before inclusion in this analysis. Bear in mind that farms included in this study are representative of large, commercial farms producing major commodities and livestock but not of all farms in Kentucky.

ACKNOWLEDGMENTS

Special recognition is extended to the Farm Business Management Specialists and farmers in the Kentucky Farm Business Management Program.. Without their involvement, this study would not have been possible. Considerable time and effort were invested allocating costs of inputs used by more than one enterprise, and making other judgments necessary to ensure the accuracy of the data.

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KFBM Beef Enterprise Survey: 1996 – 1998

Description of Beef Enterprises

This report summarizes Kentucky Farm Business Management data for a sample of beef production enterprises. Two types of cow/calf enterprises are represented in this summary: those in which calves are sold at weaning and those in which calves are retained for at least 45 days after weaning (backgrounding). Sample size for both of these types of enterprises is extremely small (see summary table). Thus it is inaccurate to consider this information to be a comprehensive summary of the performance of Kentucky beef enterprises. Rather, this information is more accurately described as a survey of beef enterprises that are thought to be more-or-less representative of beef operations enrolled in the KFBM program. Hence, it is inappropriate to generalize the results of this survey to the beef industry in the state as a whole. On the positive side, while mostly anecdotal, this study provides a depth of information not available from other sources. The KFBM program allows producers to observe the financial details of participating beef cattle operations. The descriptions included in this report can help producers diagnose potential problems and measure success.

Methods and Definitions Used in Study

Most of the production and financial data in this report were calculated as a regular part of the complete farm business records kept by participants in the Kentucky Farm Business Management Program. For inputs used by more than one enterprise, the cooperating farmers and their Farm Business Analysis Specialist allocated the proportion of costs to the beef enterprise. The following definitions and explanations are used:

Total Enterprise Returns – These are the total returns attributable to the beef enterprise for the year. It includes the value of all beef animals sold (including market and breeding), the value of beef

slaughtered for family consumption, and an inventory adjustment (positive or negative) for the difference between the value of beef animals on the farm at the start and the end of the year.

Cash Costs – The cash (or out-of-pocket) expenses such as purchased feed, supplies, and services used in the production year are considered cash costs.

Non-cash Costs – Homegrown feed, unpaid labor, depreciation and interest on investments are considered non-cash costs and are valued based on market prices/opportunity costs as explained below.

Total Enterprise Cost – This is the total charge (cash and non-cash) for all factors of production, except management, used by the beef enterprise during the year. Purchased inputs were charged at the price actually paid. Other inputs were charged using the procedures and rates employed in the Farm Business Management Program. Rates charged for operator and family labor, interest on both borrowed and equity capital, and fed corn produced on the farm are listed in the following table:

	1996	1997	1998
Fed Corn Produced on Farm (\$/Bu.)	3.75	2.78	2.39
Unpaid Labor Rate (\$/Year)	19,800	21,600	22,800
Interest Rate: Non Land	9%	9%	9%
Interest Rate: Land	5%	5%	5%

Depreciation on buildings, machinery, and equipment used in the beef enterprise was taken

from the farmer's depreciation schedule, with adjustments to straight-line when farms used expense election for new purchases. Feed raised on the farm was charged at its yearly average "on-farm" market value (what farmers would receive if the feed was sold and marketing costs were deducted). Prices for hay and silage depended upon type and quality. As an example, in 1998, corn silage prices ranged from \$20 to \$22 per ton. Grass hay prices for each of the three years ranged from \$20 to \$40 per ton while legume hay prices were considerably higher, ranging from \$60 to \$120 per ton. Pasture was charged at \$0.22 per day of grazing by an animal unit (1,000 pounds = 1 animal unit).

Net Enterprise Returns – This is what is left after **Total Enterprise Cost** is deducted from **Total Enterprise Returns**. Because all cash and non-cash costs (except a charge for management) are deducted, **Net Enterprise Returns** represent the profit attributable to management of the beef enterprise.

Charges must be made for all inputs to correctly determine enterprise profitability. One must recognize, however, that to the individual farmer, the non-cash charges for his or her equity capital are also **returns** to these factors of production (to the extent that returns are high enough to reward these inputs). Since these are the farmer's resources, the returns can be used for whatever purposes he or she wishes: family living, principal repayment, investment, etc.

Returns per \$100 Feed Fed – A gauge for every \$100 worth of feed fed calculated by dividing total feed costs into beef returns and multiplying by 100.

Beef Enterprise Survey - Calves Backgrounded

Net returns to backgrounding were negative for all three years represented in this survey. Net returns were highest in 1997 - an average of -

\$7,074 per farm or -\$86 per cow (**tables 4 and 5**). The increase in net returns from 1996 to 1997 was due to increased production and higher calf prices. Costs of production actually increased from 1996 to 1997; however, these costs were more than offset by production and output price increases. Still, as noted, these improvements were not sufficient to result in positive net returns over all costs. Net returns declined from 1997 to 1998 in spite of the fact that prices over this period increased and costs of production decreased. This decrease in net returns appears to be due to the fact that pounds of beef per cow declined during this period by 28 pounds.

In spite of poor returns in all 3 years of this survey, these operations did generate sufficient revenue to maintain a positive cash flow (**tables 2,3,5, and 6**). In every year, gross returns were sufficient to cover purchased feed and all other cash costs. For example, in 1996—the lowest return year represent here—out-of-pocket expenses totaled \$26.70/cwt of beef produced compared with gross returns of \$37.89/cwt of beef produced. In 1997—the highest return year—out-of-pocket expenses totaled just \$29.20/cwt of beef produced versus gross returns of \$63.59/cwt of beef produced. Clearly, in terms of return over cash costs, the beef operations in this survey performed rather well. However, the failure to cover all costs in any year, particularly 1997 when prices and production were both relatively favorable, does raise concern over the long-run survivability of the beef operations in this survey.

Beef Enterprise Survey - Calves Sold

The survey of beef operations in which calves were sold at weaning is quite thin. There are two operations in this survey in 1996 and 1997 and three operations in 1998. On average, these operations were not profitable over the 1996 – 1998 period. Net returns (over all costs) ranged from an average of -\$270 per cow in 1996 to -\$92 per cow in 1997 (**table 2**).

The economic environment was improving for cow/calf producers over this period. Cattle prices increased in each year of this survey, and costs of production decreased each year. In spite of lower costs and higher prices in 1998 as compared to 1997, net returns were higher in 1997. This appears to have been primarily due to higher physical production in 1997. Pounds of beef produced per cow in 1997 was 32 pounds above the 3-year average (**table 1**).

In all three years, gross returns were sufficient to cover out-of-pocket expenses (i.e., purchased feed and cash costs). In 1996, the lowest gross return year, (39.08/cwt of beef produced) these out-of-pocket costs totaled only \$24.87/cwt of beef produced (table 3). Thus, on a cash flow basis, the farms in this survey made out quite well. The fact that cash costs are so low for these beef enterprises helps to explain how they can persist in the cow/calf business despite extended periods of low (and even negative) profitability.

Comparison of the Calves Sold and Calves Backgrounded Enterprises

Data in the tables shows a few key differences between the two enterprises. Net returns on a per cow basis were \$24 higher for backgrounders. Pounds of beef sold per cow when calves were retained is up, but only by a relatively small amount—30 pounds in 1996, 83 pounds in 1997, and 86 pounds in 1998. However, while selling weights were evidently higher, sale prices were also higher as well. The average price received on backgrounded calves was \$2.53/cwt higher than the average price received on calves sold at weaning. On the cost side, total cash cost per hundredweight was lower on backgrounded calves (by about \$3) and as a percentage of total costs (20% compared to 22%). However, non-cash costs were more than \$4/cwt higher, more than offsetting the cash cost advantage created by backgrounding.

Market Analysis

The prices received by study participants followed state trends for the 1996 – 1998 period. Data published in the Kentucky Agricultural Statistics Service (KASS) 1998-99 annual report showed Kentucky average steer and heifer prices in 1996 at \$48/cwt, in 1997 at \$67/cwt, and in 1998 at \$66/cwt. In 1997, participants' prices were below the state average. However, in 1996 and 1998, prices received exceeded the state average price by \$2-\$4/cwt. This is summarized in the following **table**:

**Prices Received by Farmers:
1996 – 98 (\$/cwt)**

	1996	1997	1998
Calves Sold	\$49.34	\$64.68	\$63.32
Calves Backgrounded	\$52.08	\$66.40	\$71.48
Kentucky Average ¹	\$48.00	\$67.00	\$66.00

¹Source: Kentucky Agricultural Statistics Service

Since these averages will be affected by many factors including the time of year in which cattle are sold, weights, etc., these comparisons should only be used in general terms. However, the state data can be used as a benchmark to compare the market price management of the farms.

Summary

A consistent finding in Kentucky Beef and other livestock studies has been a large variation among individual producers in levels of production efficiency and costs and returns per unit of production. Generally, the high return producers realize more beef produced per cow and a higher price per pound sold. On the cost side of the ledger, substantial differences show up between producers. With feed cost being the highest single expense, it was expected and found that producers earning higher net returns have lower feed cost

per cow and per hundredweight produced. In general, the lower return producers will realize higher non-feed costs as well. A general question that cannot be answered with this small data set is whether or not low cost operations are the most profitable. In other words, can astute spending increase productivity enough to more than offset higher costs?

The beef enterprise involves a complex production process with a number of factors affecting costs and returns. Some are, for the most part, beyond the producer's control such as beef prices, weather, and interest rates. But the operator's action (or inaction) directly influences all other management decisions. Thus, a beef producer does have an impact on the profitability of the beef enterprise.

Table 1. KFBM Enterprise Production Summary: Beef Calves Sold

Enterprise Summary	1996	1997	1998	Average
Number of Herds	2	2	3	2.3
Total Beef Returns	17,701	30,181	21,243	23,042
Total Feed Cost	21,095	19,202	16,744	19,014
Returns Above Feed Cost	-3,394	10,980	4,498	4,028
Total Nonfeed Costs	19,250	18,121	15,984	17,785
Net Returns (over all costs)	-22,644	-7,141	-11,485	-13,757
Other Economic Variables				
Returns per \$100 Feed Fed	96.50	158.00	128.33	127.61
Price Rec'd per CWT: Market	49.34	64.68	68.32	60.78
Price Rec'd per Cwt: All Sales	44.09	59.63	62.43	55.38
Capital Investment per Cow				
Livestock	652	623	675	650
Non-Livestock	296	315	293	301
Total Capital Investment	948	938	968	951
Other Production Variables				
Average Number of Cows	89	88	80	86
Animal Units in Herd	123	121	105	116
Total Beef Produced (LB)	45,635	49,945	41,747	45,776
Pounds of Beef per Cow	521	585	554	553
Death Loss: % of LB Produced	5.6%	3.0%	3.3%	4.0%
Total Concentrates (LB/CWT of Beef)	166	111	139	139
Hay and Dry Forage (LB/CWT of Beef)	876	738	901	838
Corn Silage (LB/CWT of Beef)	0	0	0	0
Other Silage (LB/CWT of Beef)	0	0	0	0
Pasture Days per Animal Unit	243	248	244	245
Hay Equiv. per Cow (Ton)	6.3	6.3	6.1	6.2
Labor Summary				
Months per Cow	0.03	0.03	0.03	0.03
Hours per Cow	6.8	5.8	6.0	6.2
Beef Production/Worker/Year	200,272	258,475	233,762	230,836

Table 2. KFBM Enterprise Cost and Return Summary: Beef Calves Sold

	\$/cow			
	1996	1997	1998	Average
Total Beef Returns	198	357	276	277
Feed Costs				
Purchased Concentrates	42	29	39	37
Purchased Hay and Other	0.00	1.00	0.00	0.33
Home Raised Feed	205	196	181	194
Total Feed Costs	247	226	220	231
Cash Costs				
Veterinary & Livestock Supplies	15	12	25	17
Fuel & Oil	5	7	6	6
Machinery Repair	11	10	9	10
Bldg/Fence Repair	23	34	12	23
Machinery Hire	4	5	3	4
Utilities	2	2	2	2
Auto-Farm Share	0	0	0	0
Paid Labor	15	12	16	14
Insurance, Property Taxes, & Misc	4	2	4	3
Cash Interest	14	14	21	16
Total Cash Costs	93	98	98	96
Non-cash Costs				
Unpaid Labor	35	31	31	32
Machinery Depreciation	15	15	11	14
Bldg/Fence Depreciation	7	9	6	7
Non-cash Interest	71	70	65	69
Total Non-cash Costs	128	125	113	122
Total Costs of Production	468	449	431	449
Net Returns	-270	-92	-155	-172

Note: These data give costs and returns in \$/cow in the herd.

Table 3. KFBM Enterprise Cost and Return Summary: Beef Calves Sold

	\$/cwt			
	1996	1997	1998	Average
Total Beef Returns	39.08	60.75	52.09	50.64
Feed Costs				
Purchased Concentrates	7.12	5.03	7.05	6.40
Purchased Hay and Other	0.00	0.09	0.00	0.03
Home Raised Feed	38.61	33.37	34.60	35.53
Total Feed Costs	45.73	38.49	41.65	41.96
Cash Costs				
Veterinary & Livestock Supplies	2.56	1.83	4.19	2.86
Fuel & Oil	0.94	1.16	1.16	1.09
Machinery Repair	1.95	1.57	1.71	1.74
Bldg/Fence Repair	4.72	5.66	2.53	4.30
Machinery Hire	0.78	0.87	0.45	0.70
Utilities	0.37	0.35	0.37	0.36
Auto-Farm Share	0	0	0	0
Paid Labor	2.94	2.08	3.30	2.77
Insurance, Property Taxes, & Misc	0.79	0.43	0.78	0.67
Cash Interest	2.71	2.60	6.13	3.81
Total Cash Costs	17.76	16.55	20.62	18.31
Non-cash Costs				
Unpaid Labor	6.48	5.17	5.75	5.80
Machinery Depreciation	3.04	2.55	2.40	2.66
Bldg/Fence Depreciation	1.24	1.36	0.93	1.18
Non-cash Interest	13.63	11.60	10.05	11.76
Total Non-cash Costs	24.39	20.68	19.13	21.40
Total Costs of Production	87.88	75.72	81.40	81.67
Net Returns	-48.80	-14.97	-29.31	-31.03

Note: These data give costs and returns on the basis of \$/cwt of beef produced.

Table 4. KFBM Enterprise Production Summary: Beef Calves Backgrounded

Enterprise Summary	1996	1997	1998	Average
Number of Herds	7	8	8	8
Total Beef Returns	23,434	41,862	33,460	32919
Total Feed Cost	19,960	23,038	21,256	21418
Returns Above Feed Cost	3,473	18,824	12,205	11501
Total Nonfeed Costs	22,086	25,898	25,502	24495
Net Returns (over all costs)	-18,613	-7,074	-13,298	-12995
Other Economic Variables				
Returns per \$100 Feed Fed	106.43	178.88	153.14	146.15
Price Rec'd per CWT: Market	52.08	66.40	71.48	63.32
Price Rec'd per Cwt: All Sales	47.34	59.31	55.32	53.99
Capital Investment per Cow				
Livestock	803	860	746	803
Non-Livestock	203	242	287	244
Total Capital Investment	1006	1102	1033	1047
Other Production Variables				
Average Number of Cows	101	102	97	100
Animal Units in Herd	149	151	141	147
Total Beef Produced (LB)	57,441	67,498	63,114	62,684
Pounds of Beef per Cow	551	668	640	620
Death Loss: % of LB Produced	7.1%	6.0%	10.0%	7.7%
Total Concentrates (LB/CWT of Beef)	72	86	125	94
Hay and Dry Forage (LB/CWT of Beef)	842	795	808	815
Corn Silage (LB/CWT of Beef)	165	155	91	137
Other Silage (LB/CWT of Beef)	0	0	0	0
Pasture Days per Animal Unit	228	205	213	215
Hay Equiv. per Cow (Ton)	6.4	6.5	6.4	6.4
Labor Summary				
Months per Cow	0.04	0.04	0.05	0.04
Hours per Cow	7.7	8.6	9.3	8.5
Beef Production/Worker/Year	186,761	204,906	177,980	189,882

Table 5. KFBM Enterprise Cost and Return Summary: Beef Calves Backgrounded

	\$/cow			
	1996	1997	1998	Average
Total Beef Returns	214	415	337	322
Feed Costs				
Purchased Concentrates	28	28	26	27
Purchased Hay and Other	26	3	32	20
Home Raised Feed	152	209	165	175
Total Feed Costs	206	240	223	223
Cash Costs				
Veterinary & Livestock Supplies	19	18	20	19
Fuel & Oil	4	6	4	5
Machinery Repair	11	15	8	11
Bldg/Fence Repair	10	9	13	11
Machinery Hire	3	9	3	5
Utilities	3	3	3	3
Auto-Farm Share	2	2	2	2
Paid Labor	7	9	17	11
Insurance, Property Taxes, & Misc	11	10	15	12
Cash Interest	13	19	9	14
Total Cash Costs	83	100	94	92
Non-cash Costs				
Unpaid Labor	50	60	64	58
Machinery Depreciation	7	12	12	10
Bldg/Fence Depreciation	3	4	5	4
Non-cash Interest	78	86	83	82
Total Non-cash Costs	138	162	164	155
Total Costs of Production	427	502	481	470
Net Returns	-213	-87	-144	-148

Note: These data give costs and returns in \$/cow in the herd.

Table 6. KFBM Enterprise Cost and Return Summary: Beef Calves Backgrounded

	\$/cwt			
	1996	1997	1998	Average
Total Beef Returns	37.89	62.59	52.74	51.07
Feed Costs				
Purchased Concentrates	5.63	4.20	4.45	4.76
Purchased Hay and Other	5.78	0.45	6.09	4.11
Home Raised Feed	27.01	31.44	25.02	27.82
Total Feed Costs	38.42	36.09	35.56	36.69
Cash Costs				
Veterinary & Livestock Supplies	3.12	2.63	3.15	2.97
Fuel & Oil	0.79	0.90	0.67	0.79
Machinery Repair	2.18	2.35	1.31	1.95
Bldg/Fence Repair	1.91	1.69	1.98	1.86
Machinery Hire	0.30	0.95	0.78	0.68
Utilities	0.58	0.42	0.52	0.51
Auto-Farm Share	0.41	0.35	0.34	0.37
Paid Labor	1.27	1.38	2.93	1.86
Insurance, Property Taxes, & Misc	1.97	1.47	2.28	1.91
Cash Interest	2.76	3.07	1.36	2.40
Total Cash Costs	15.29	15.21	15.32	15.27
Non-cash Costs				
Unpaid Labor	9.44	9.16	9.86	9.49
Machinery Depreciation	1.44	1.78	1.96	1.73
Bldg/Fence Depreciation	0.53	0.63	0.73	0.63
Non-cash Interest	14.31	12.96	13.54	13.60
Total Non-cash Costs	25.72	24.53	26.09	25.45
Total Costs of Production	79.43	75.83	76.97	77.41
Net Returns	-41.54	-13.24	-24.23	-26.34

Note: These data give costs and returns in \$/cwt of beef produced.

Appendix A

Figures for Beef Calves Sold Enterprise

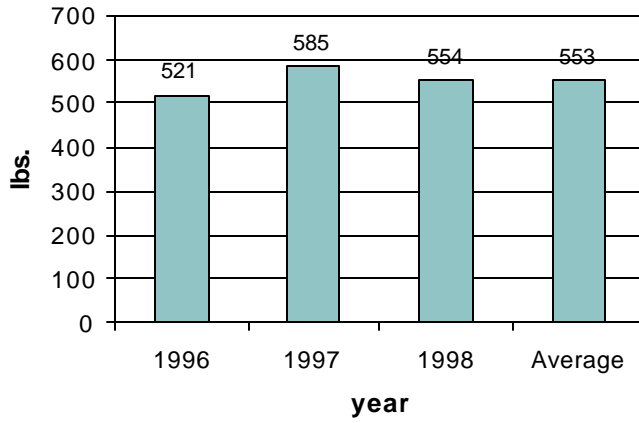


Figure 1a. Pounds of beef produced per cow: beef calves sold

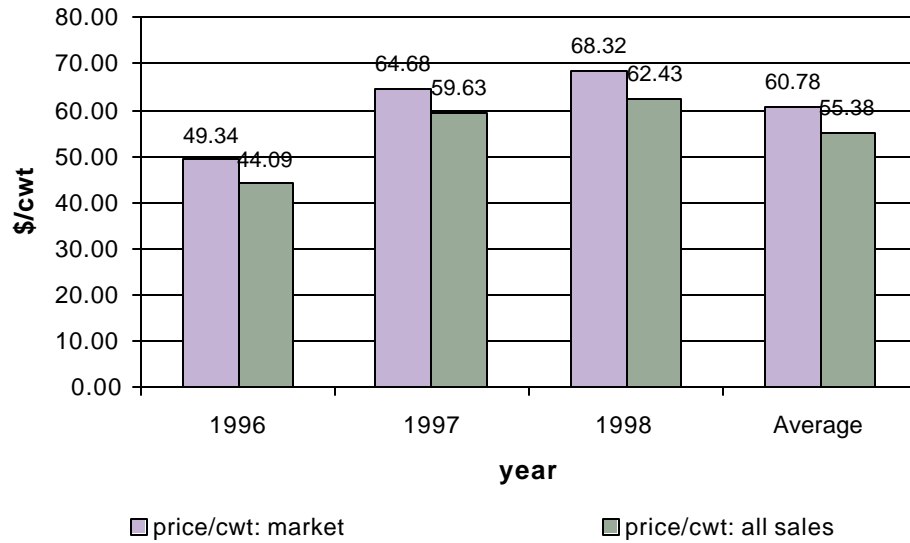


Figure 2a. Prices received by farmers: beef calves sold

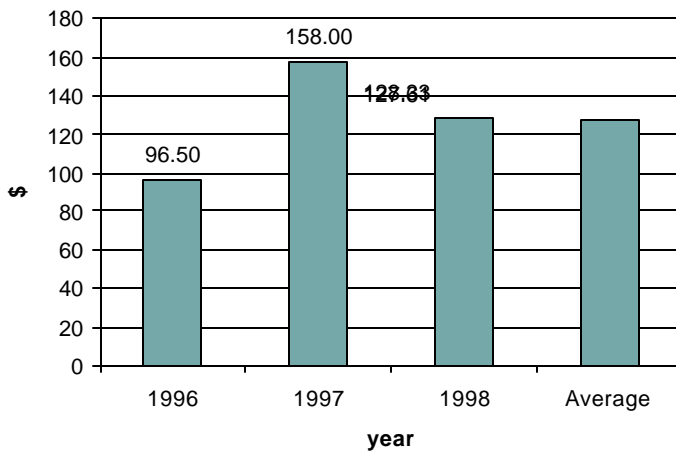


Figure 3a. Returns per \$100 of feed fed: beef calves sold

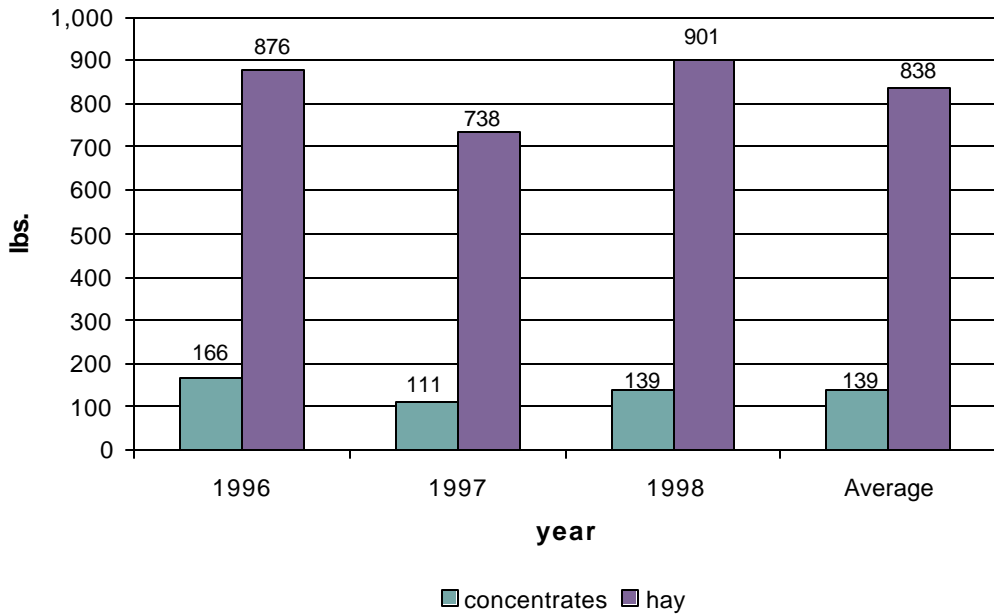


Figure 4a. Feed per hundredweight of beef produced: beef calves sold

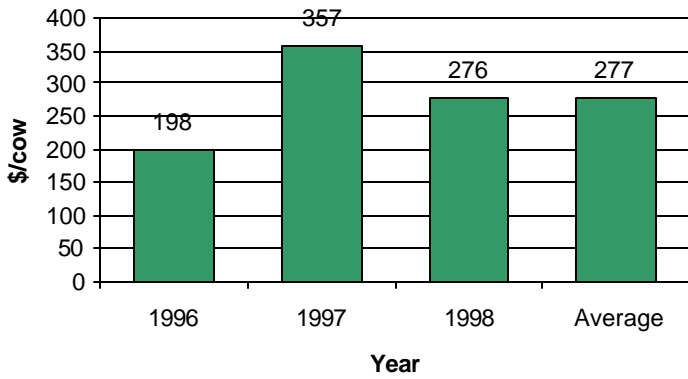


Figure 5a. Total beef returns: beef calves sold (\$/cow)

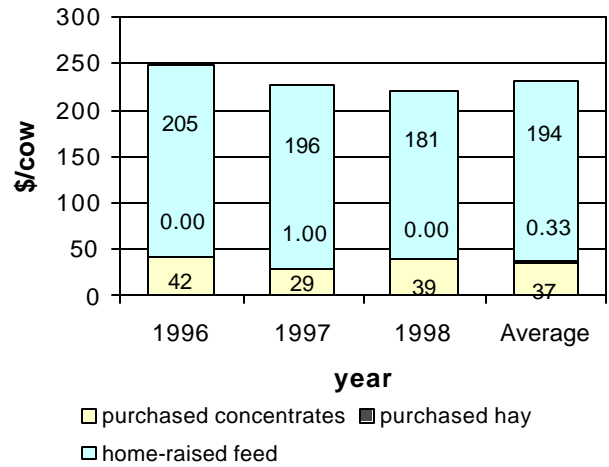


Figure 6a. Total feed cost: beef calves sold (\$/cow)

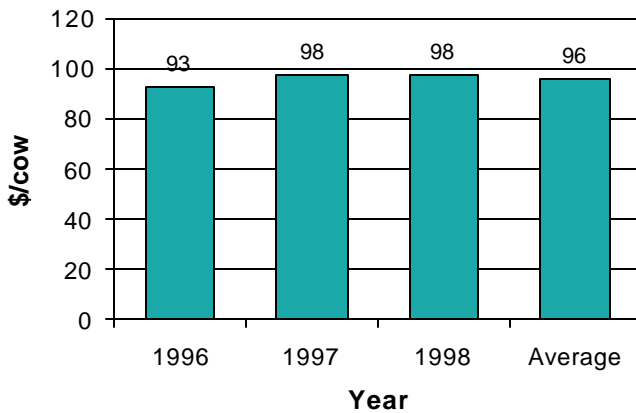


Figure 7a. Non-feed cash costs: beef calves sold (\$/cow)

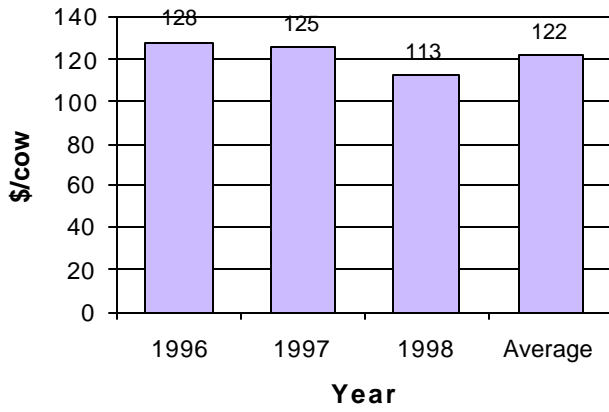


Figure 8a. Non-cash costs: beef calves sold (\$/cow)

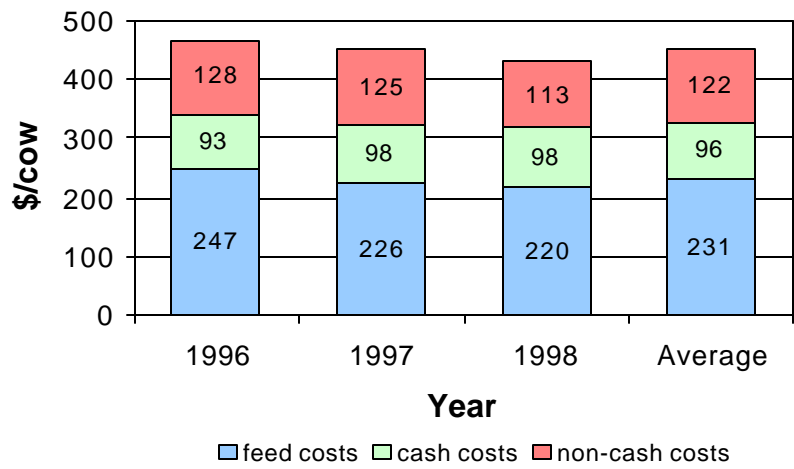


Figure 9a. Total cost of production: beef calves sold (\$/cow)

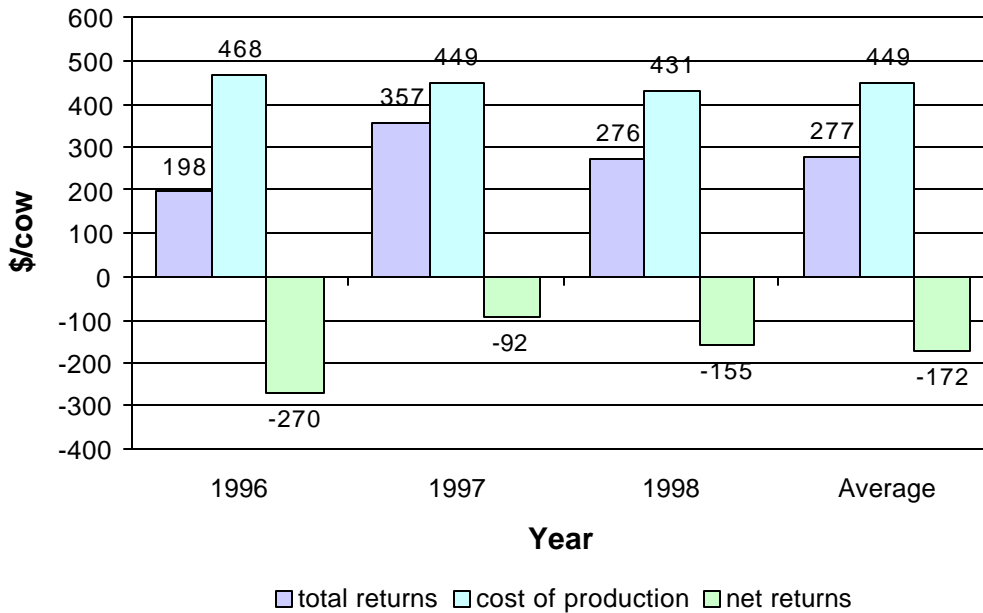


Figure 10a. Cost and return summary: beef calves sold (\$/cow)

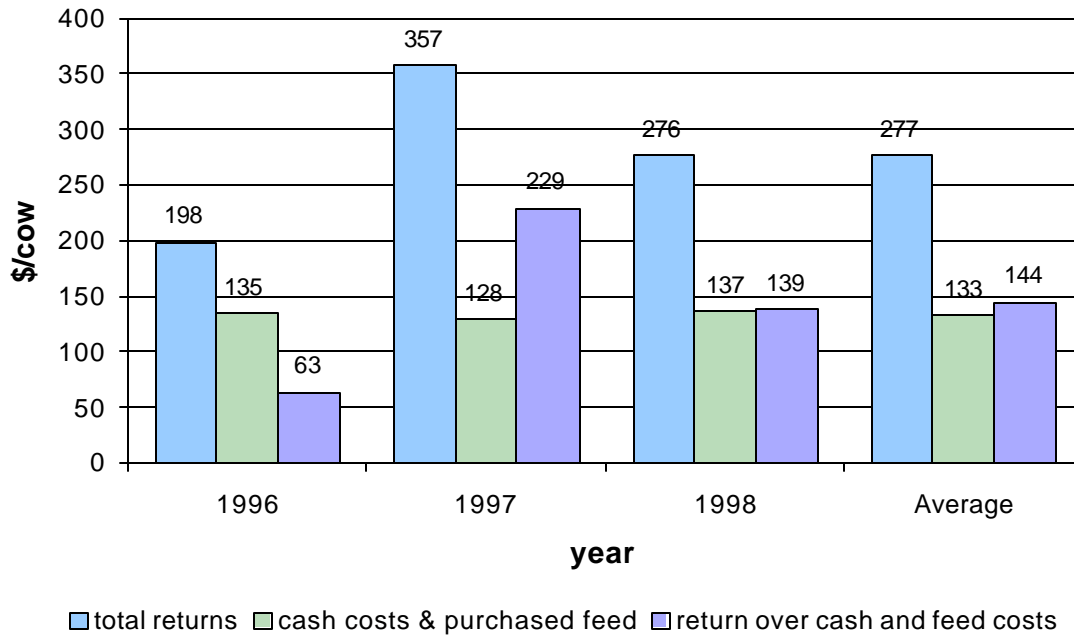


Figure 11a. Return over cash costs and purchased feed: beef calves sold (\$/cow)

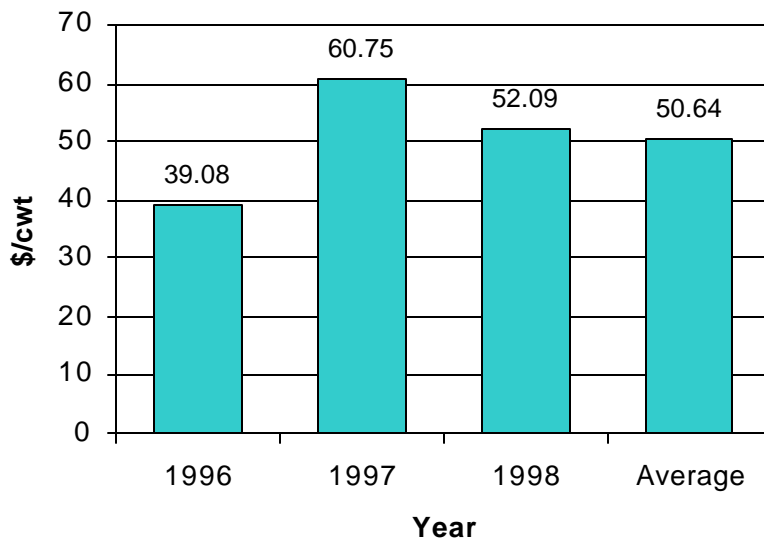


Figure 12a. Total beef returns: beef calves sold (\$/cwt)

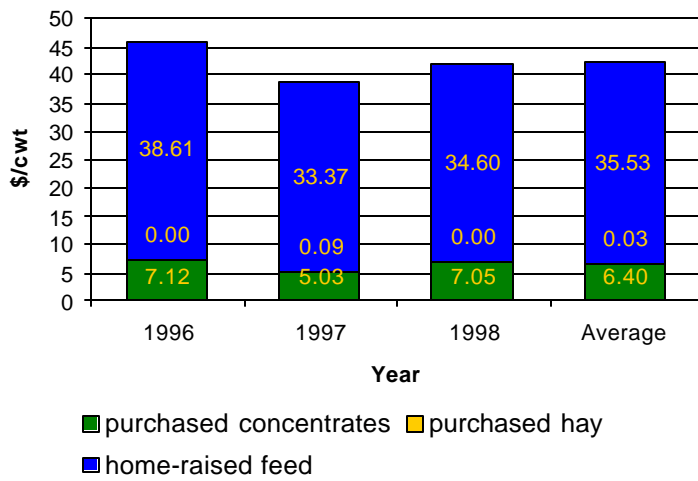


Figure 13a. Total feed cost: beef calves sold (\$/cwt)

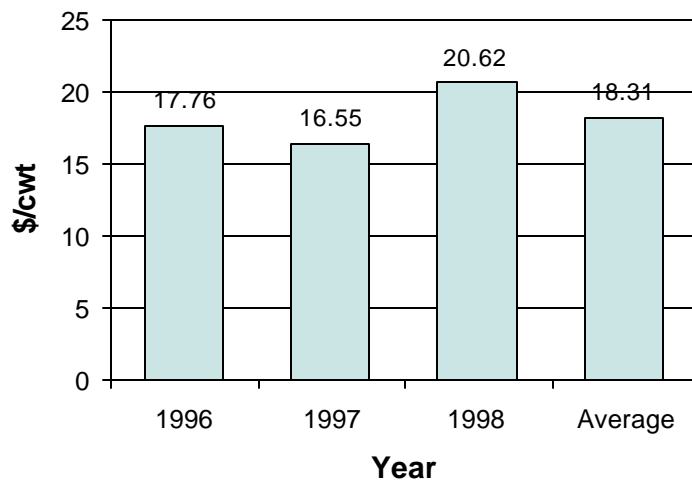


Figure 14a. Non-feed cash costs: beef calves sold (\$/cwt)

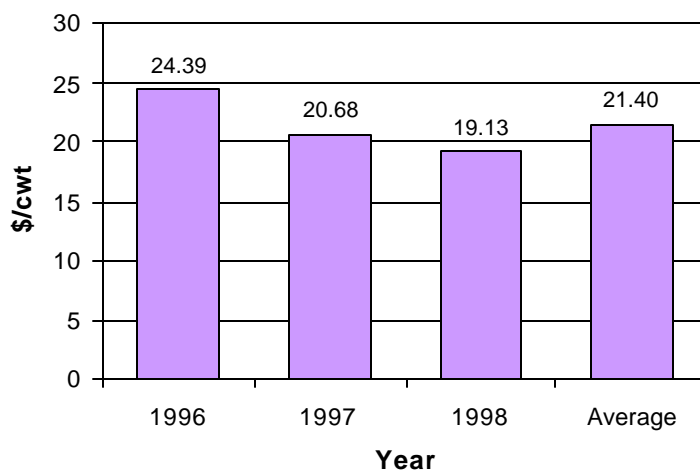


Figure 15a. Non-cash costs: beef calves sold (\$/cwt)

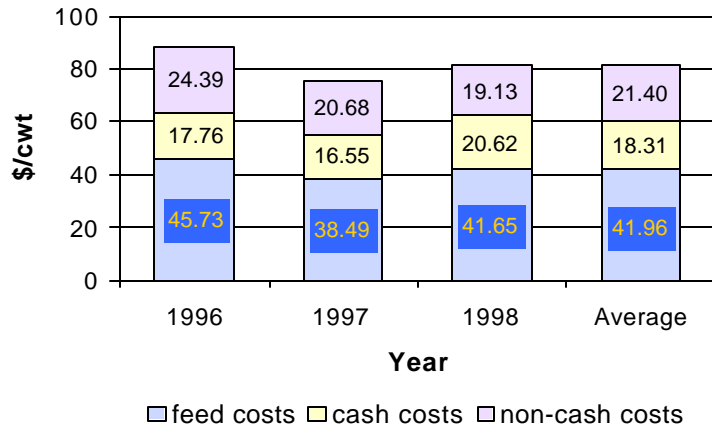


Figure 16a. Total cost of production: beef calves sold (\$/cwt)

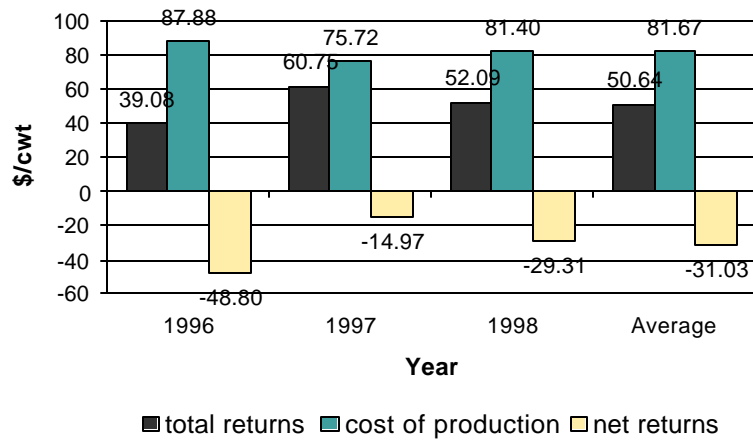


Figure 17a. Cost and return summary: beef calves sold (\$/cwt)

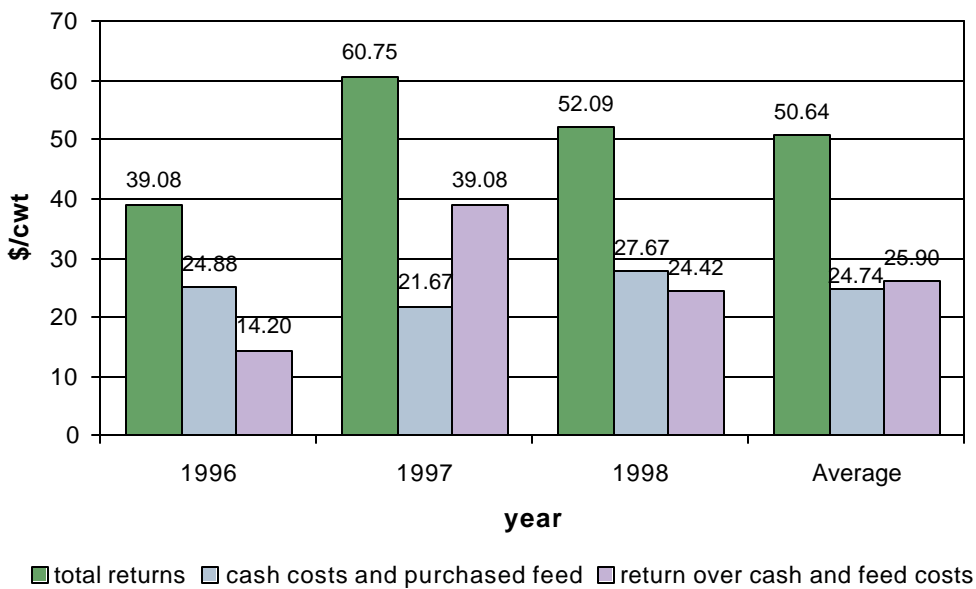


Figure 18a. Return over cash costs and purchased feed: beef calves sold (\$/cwt)

Appendix B

Figures for Beef Calves Backgrounded Enterprise

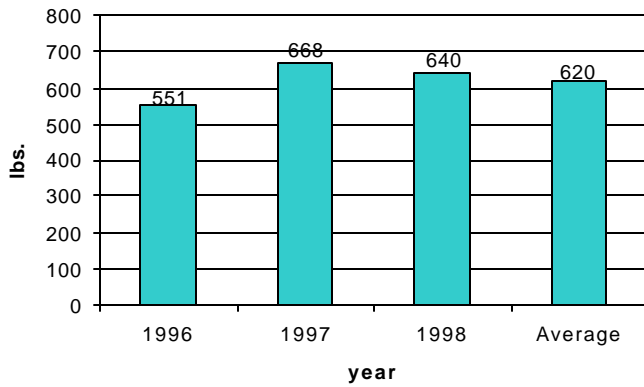
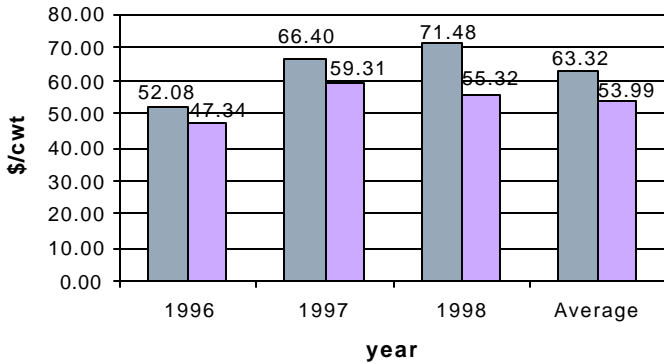


Figure 1b. Pounds of beef produced per cow: beef calves backgrounded



price/cwt: market price/cwt: all sales

Figure 2b. Prices received by farmers: beef calves backgrounded

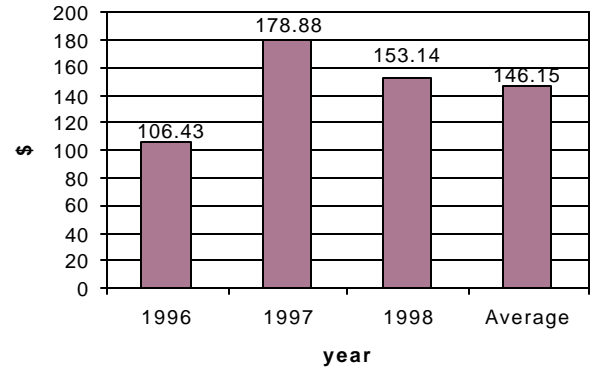


Figure 3b. Returns per \$100 of feed fed: beef calves backgrounded

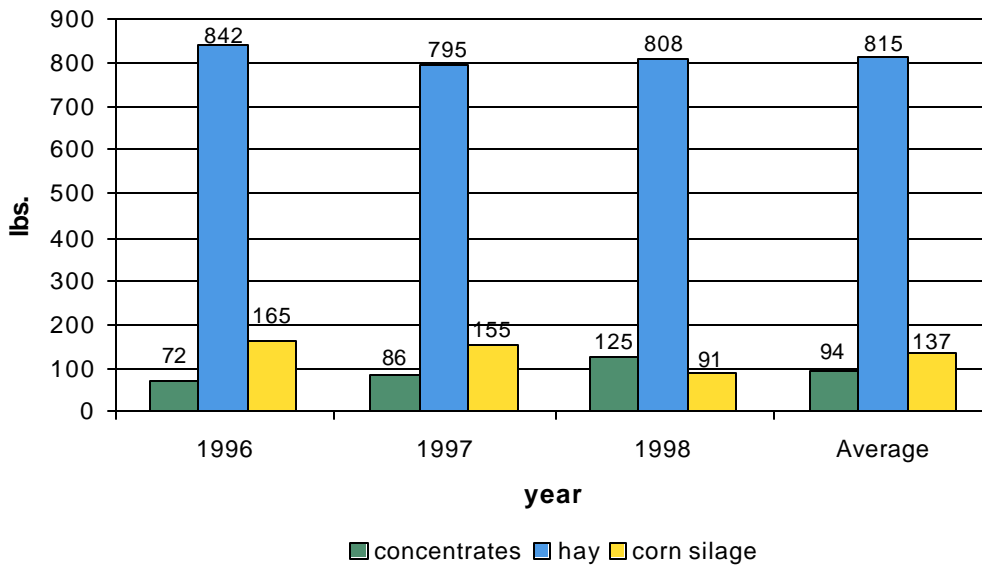


Figure 4b. Feed fed per hundredweight of beef produced: beef calves backgrounded

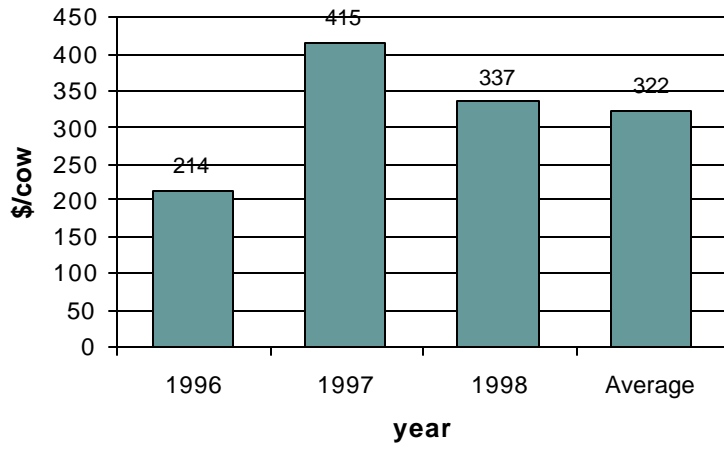


Figure 5b. Total beef returns: beef calves backgrounded (\$/cow)

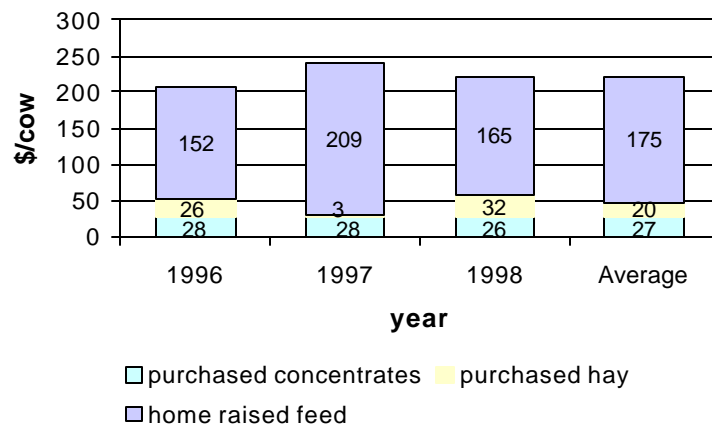


Figure 6b. Total feed cost: beef calves backgrounded (\$/cow)

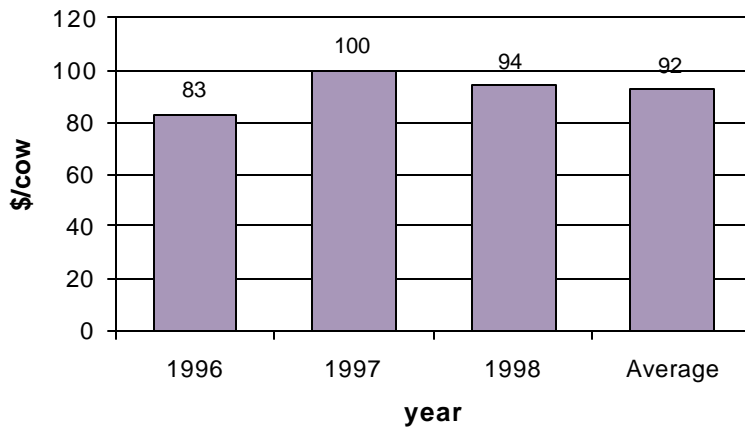


Figure 7b. Non-feed cash costs: beef calves backgrounded (\$/cow)

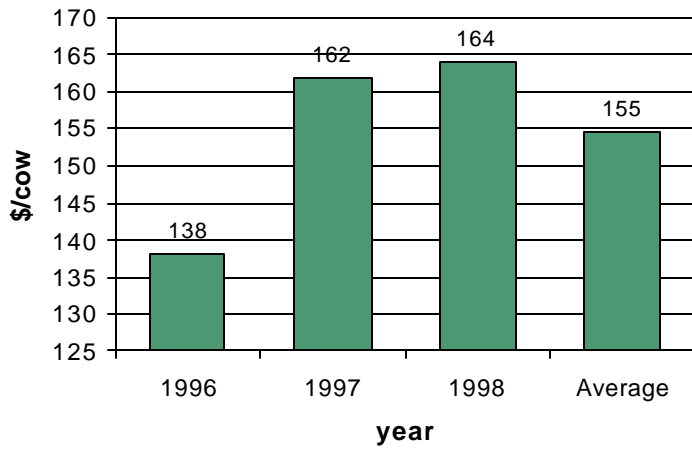


Figure 8b. Non-cash costs: beef calves backgrounded (\$/cow)

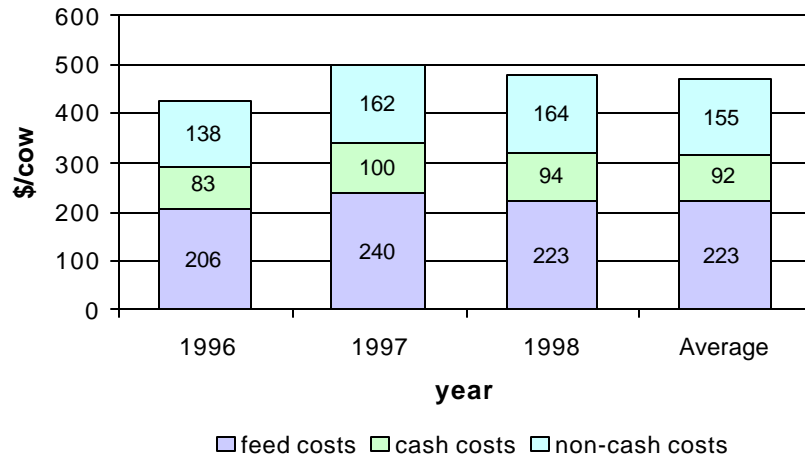


Figure 9b. Total cost of production: beef calves backgrounded (\$/cow)

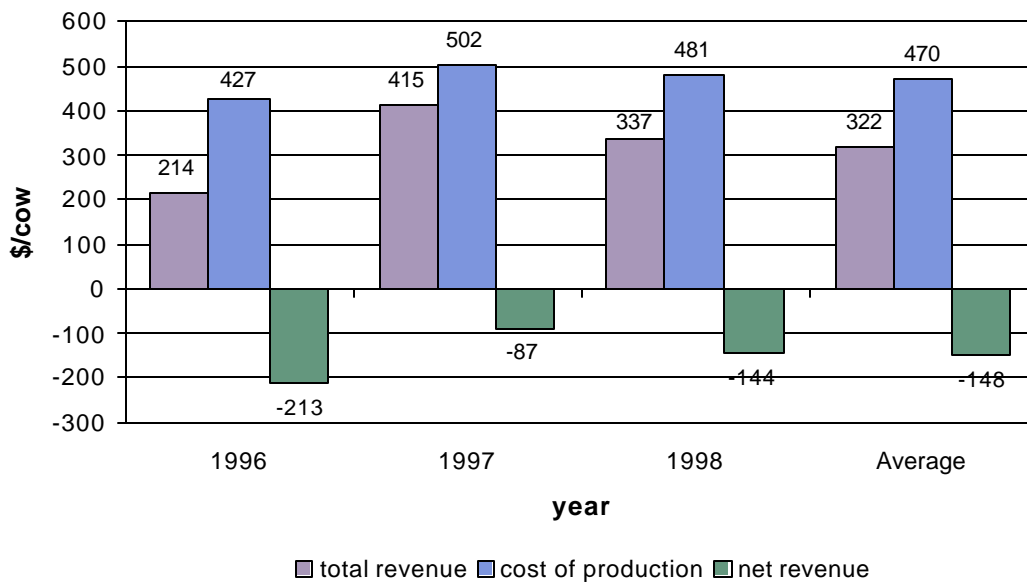


Figure 10b. Cost and return summary: beef calves backgrounded (\$/cow)

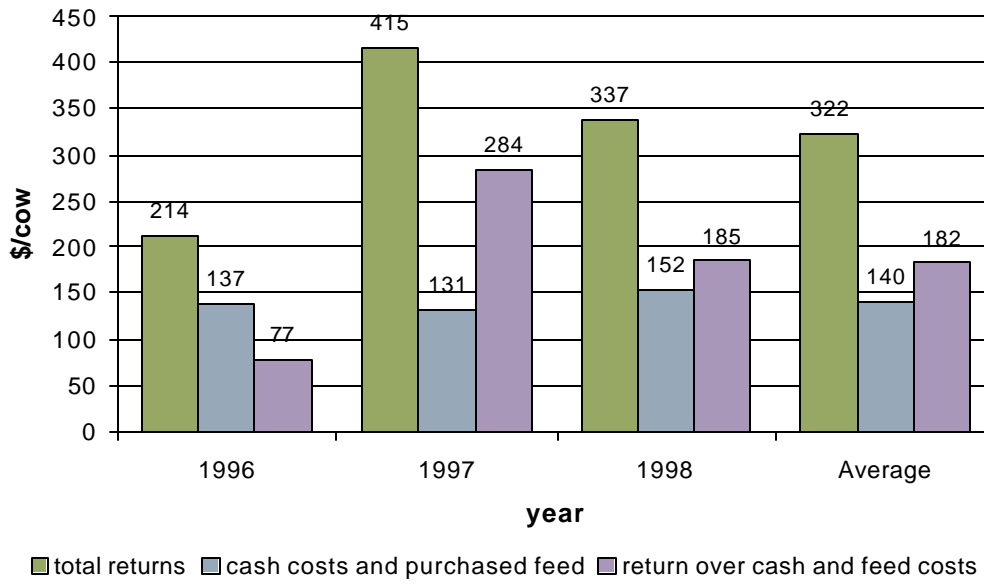


Figure 11b. Return over cash costs and purchased feed: beef calves backgrounded (\$/cow)

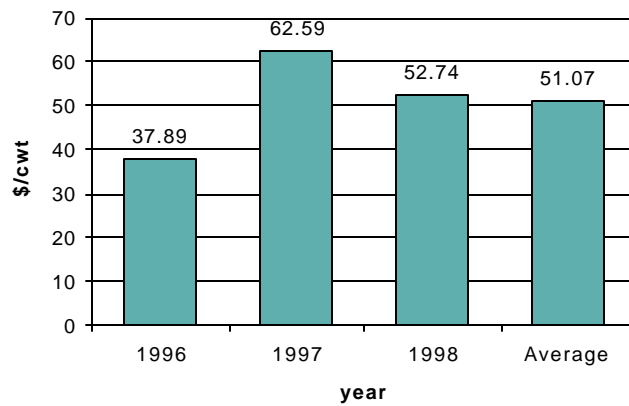


Figure 12b. Total beef returns: beef calves backgrounded (\$/cwt)

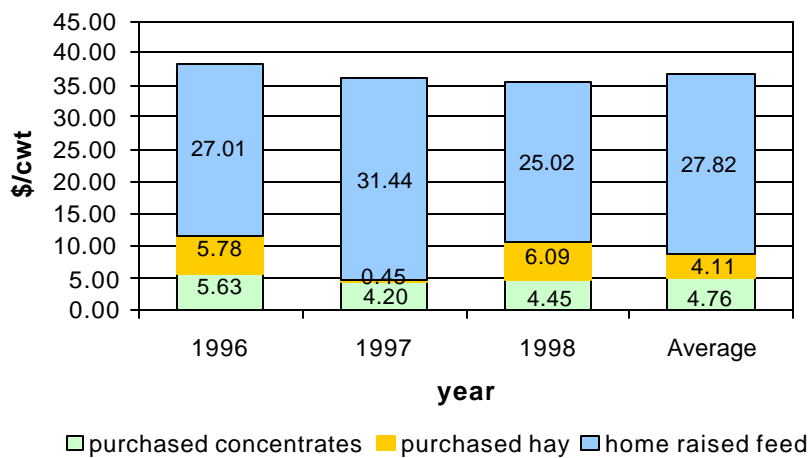


Figure 13b. Total feed cost: beef calves backgrounded (\$/cwt)

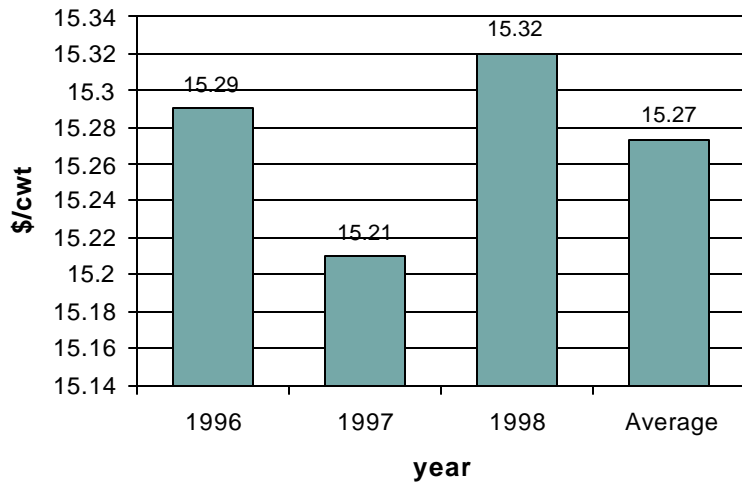


Figure 14b. Non-feed cash costs: beef calves backgrounded (\$/cwt)

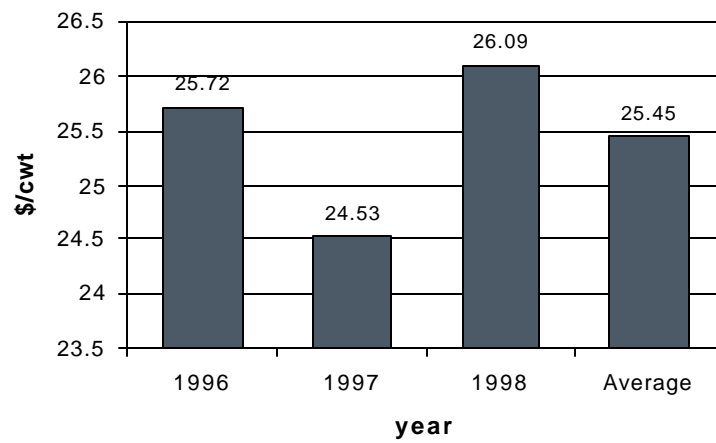


Figure 15b. Non-cash costs: beef calves backgrounded (\$/cwt)

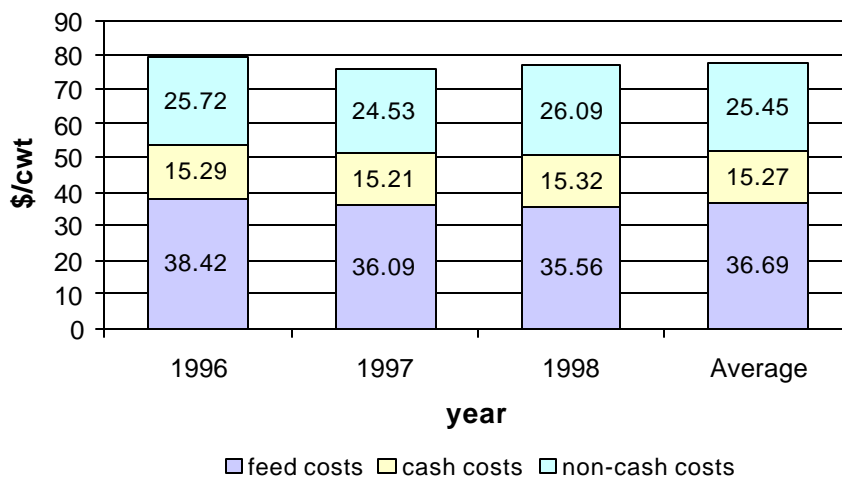


Figure 16b. Total cost of production: beef calves backgrounded (\$/cwt)

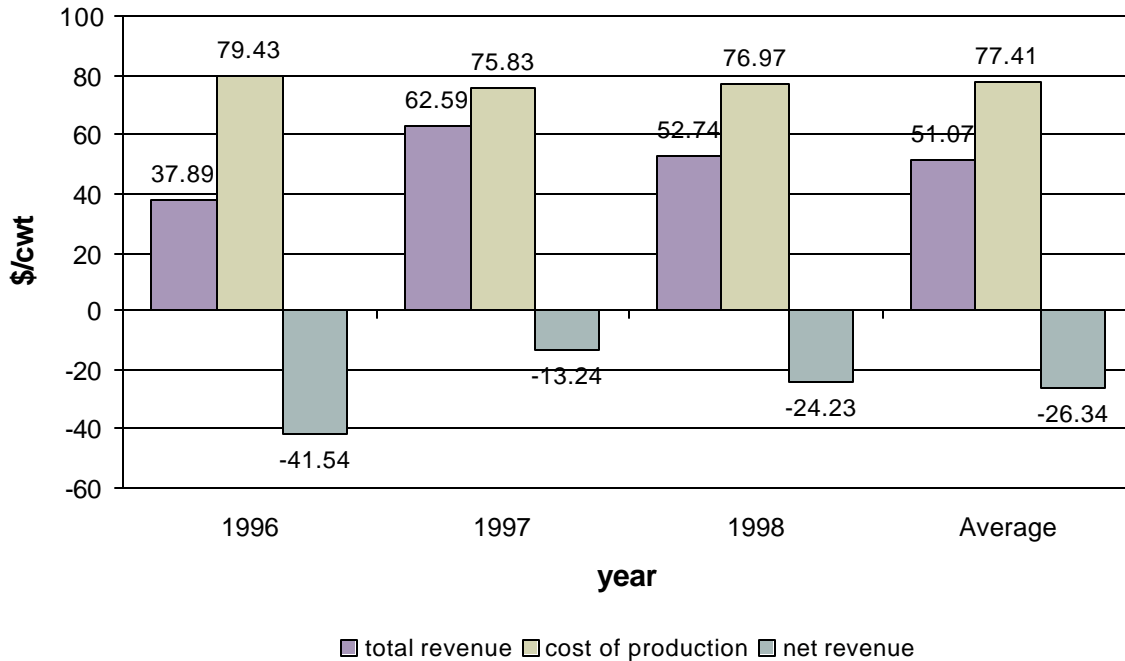


Figure 17b. Cost and return summary: beef calves backgrounded (\$/cwt)

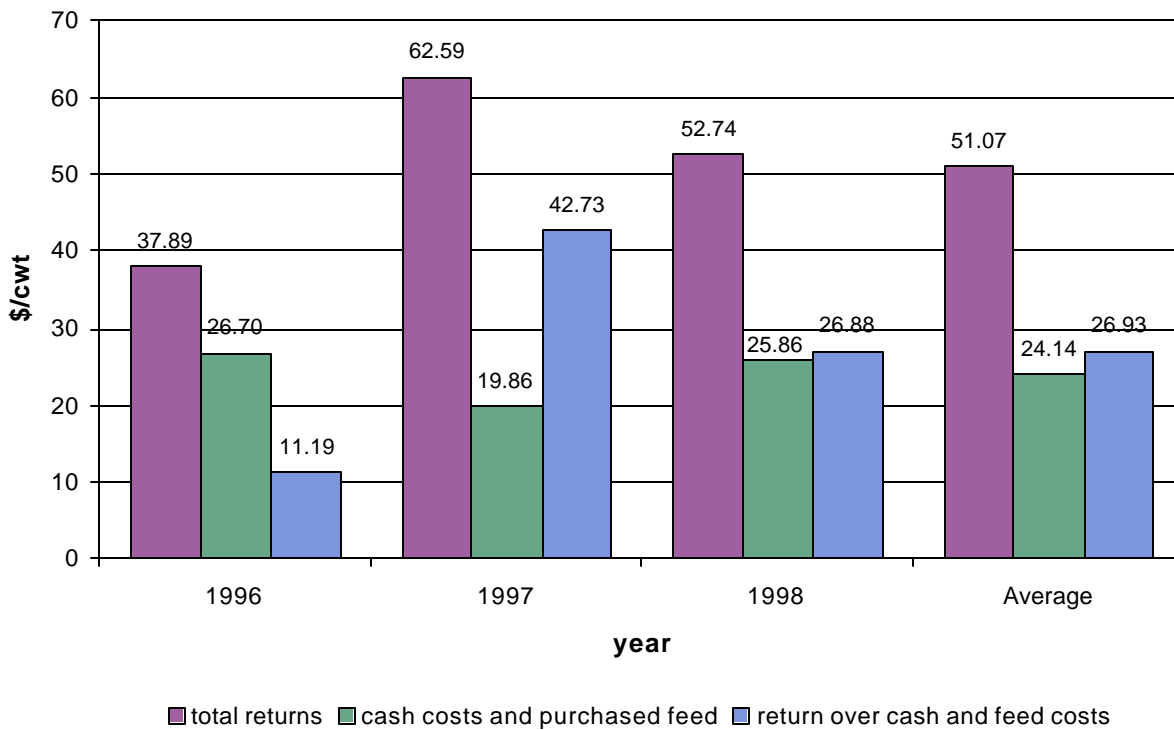


Figure 18b. Return over cash costs and purchased feed: beef calves backgrounded (\$/cwt)