

FINANCIAL AND PRODUCTION EVALUATION OF COW CALF, BACKGROUNDING AND FEEDLOT ENTERPRISES UTILIZING THE CHAPS FINPACK AND DATALINE™ PROGRAMS

[Kris A. Ringwall, Director](#) and [Keith J. Helmuth, Research Specialist](#)
[James L. Nelson, Animal Scientist](#); [Dickinson Research Extension Center](#)

Jerry Tuhy, Farm Management Instructor, North Dakota Farm Business Management Education

RESEARCH SUMMARY

The DATALINE™ program demonstrates cattle can be source verified back to the cow/calf operation, resulting in beginning benchmarks for weaning, feedlot, carcass and health traits and the subsequent establishment of realistic reachable goals that guide the management of cattle enterprises. In 1997, the Dickinson Research Extension Center (DREC) had an average monthly cow inventory of 313 cows, weaned 282 calves and placed on feed 131 backgrounded steer calves. Those cattle born in 1996, and harvested in 1997, averaged 522 pounds at weaning (207 days of age) and shipped to the feed yard weighing 642 pounds. The steers finished at an average of 1110 pounds including an average of 3.08 pounds per day gain and an average feed efficiency of 6.13 pounds of feed per pound of gain. The average carcass traits for steers was 707 pounds hot carcass weight, 12.5 square inches rib eye area, 2.3 final yield grade and 2.45 quality grade. Total revenue and expenses were calculated per cow and per calf. These data were utilized to establish goals for the DREC.

INTRODUCTION

DATALINE is an outgrowth of the Cow Herd Appraisal Performance Software (CHAPS) program developed by the North Dakota Beef Cattle Improvement Association and North Dakota State University Extension Service. The CHAPS and DATALINE program have made it possible for cow-calf producers to allow a complete throughput of information from the beginning (conception) to the end (retail harvest). The CHAPS program requires producers to

record and keep secure the data collected from conception to weaning. This collection of data may include, but is not limited to, cow and calf identification, calving date, sire identification, breeding date, weaning date and weaning weight. DATALINE then continues the individual animal data profile, completes health immunization and treatment records, and tracks the animal through harvest.

DATALINE compiles individual animal performance data from records provided by the CHAPS program, backgrounding records, and electronically incorporated feedlot performance and carcass data. Minimum feedlot performance includes, but not limited to, weight on feed, final weight, average daily gain, and estimated feed efficiency. Minimum carcass data provided includes carcass weight, USDA Yield and Quality Grade, and carcass conformity. Specifically, any current or future CHAPS cow-calf producer can enroll steers or heifers born during the current year. Enrollments are limited to truck load lots of approximately 48,000 pounds in which calves need to be of like quality, weight, sex, and age.

The purpose of CHAPS and DATALINE is to accumulate a data base that adequately describes the producers cattle and then allows that producer to make necessary genetic and management changes within the operation as needed. The genetic and management changes need to be guided by the operation's goals which are set and reviewed throughout this process. These goals must be set based on realistic bench marks attained through data analysis and the individual operation's data. Just as individual producers must set their operation's goals, goals have been set for the Dickinson Research Extension Center (DREC) based on data obtained from CHAPS, FINPACK and DATALINE. These goals for the center may be utilized by producers to assist in modeling their operation's goals.

MATERIALS AND METHODS

The first set of cattle through the DATALINE program were three loads of cattle from DREC. On November 11, 1996, 76 steers and on December 3, 1996, 91 steers and 67 heifers were shipped to Decatur County Feed Yard Inc. at Oberlin Kansas. The DREC sent a second set of calves on December 18, 1997. Within this group of calves were 131 steers and 79 heifers. In both years, calves were of mixed breeding from the DREC herd and were sired by Angus, Red Angus and Charolais bulls. The minimum CHAPS data was available for all calves, in addition, individual sires were recorded for Angus sired calves. All calves were sent with the exception of replacement heifers

and calves with recent health problems. Only the steer data is noted within this report.

The center retained 50% ownership of all 1996 calves and 1997 steers and full ownership of the 1997 heifers. Cattle were brand inspected by the local brand inspector and issued health papers by the local veterinarian prior to shipping. The center was responsible for trucking arrangements and paid for all trucking.

The DATALINE program requires \$1 per head enrolled in the project plus \$.50 per cow/calf record for the CHAPS program. The feed yard charge for the collection of the data was \$10 per head to cover costs incurred such as, electronic tagging, ultrasound scanning, sorting, individual weighing, and carcass data retrieval. This \$10 per head was allocated based on the percentage of ownership retained in each load lot. For those lots in which DREC retained ownership of only 50%, the fees were \$5.00.

Calves received 7-way clostridial and 4-way viral vaccinations, prior to weaning and received a vaccination booster for the 7-way clostridial and 4-way viral. Hemophilus Somnus and Pasteurella vaccinations were also included in the vaccination program. The calves were weaned and on feed for a minimum of 30 days at DREC. Following arrival at the feed yard, the cattle were managed according to the program defined by Decatur Feed Yard. Finished cattle were priced on a value based grid negotiated by Decatur Feed Yards with Monfort and Excel.

RESULTS AND DISCUSSION

[Table 1](#) presents the average number of cow for the operation and subsequent gross returns, expense details and net return per cow for the operation. In 1997, DREC completed a financial analysis (FINPACK) to attain the actual information for these variables. The basic documentation of gross revenues (adjusted for inventory change and depreciation) and overall enterprise expenses are needed to understand and to answer the question "is the cow-calf business financially sound and capable of supporting realistic business expectations?". Once the net return per cow is known, the operator can attempt to make improvement.

The center averaged 313 cows, returned \$473.79 per cow, with total expense per cow of \$398.00 for a net return of \$79.79. Having these figures allows DREC to begin setting goals. The center, as should each producer, first needs to set the number of cows that the operation is capable of maintaining while meeting the financial needs of the

operation. For DREC, that figure is a monthly average of 313 cows for the year, which has set a value for the first goal. Given the number of cows, the net return per cow needs to reflect the total dollars needed to meet a realistic return to labor management and capital. For the center, that goal is set at \$95.85. This is the bottom line of any cattle operation and must reflect the requirement that the business meet labor, management and return to capital needs before a profit is realized. In the case of DREC, this goal is derived from the final value of the market animal ([table 3](#)), minus cow calf expenses and feedlot expenses. These two goals must be set first, or realistic long term survival is unlikely.

Goals will change, and are not always easy to set. Since only one year's analysis is presented, currently goals have not been set for the expense variables of direct, overhead, background and total. Although one would assume that the general goal for all these variables is to lower them, realistically, that may not be able to be done. Currently, DREC accepts what actual data is available, and will forgo setting goals until realistic trends can be better achieved.

More details are available to support the overall goals are noted in subsequent tables. Although the general operation functions based on the number of cows, the principle product sold is still calves, and the required income and expense needs to be adjusted to a calf basis to better comprehend production and financial performance. [Table 2](#) presents the total number of calves weaned, pre-weaning death loss, weaning performance and subsequent breakeven prices based on performance and total per calf expenses. Performance variables, across years, are included to add greater understanding to the operation's long term position. The center lost 2.5% of calves born in 1996, and 12.4% in 1997 compared to an average death loss of 4.5% from 1990 to 1997. Obviously, The resulting breakeven price for 1997 would be influenced by the increased death loss. Since the financial analysis for 1996 is not available, the magnitude of impact is unknown. However, the long term goal of the center is to lose less than 4% and sell 300 live calves. Please note that the centers goal of 313 cows must not only reflect the calf death rate, but also account for other cows culled throughout the year.

In 1996 ([table 2](#)), calves were weaned at 207 days of age, and weighed 522 pounds, and in 1997, the calves were weighed at 223 days of age and weighed 542 pounds. The center's goal is to achieve 563 pounds at 202 days based on the average performance of other CHAPS herds reported by Ringwall and Helmuth elsewhere in this publication. If the center can attain these increased levels of performance and maintain average per calf expenses at less than \$441 ([table 2](#)), DREC's goal would be to achieve breakeven prices of \$62 for weaned calves and \$63.39

for backgrounded calves. Given the production and financial performance of the cattle operation within DREC, to attain the goal of \$95 per cow net income from weaned calves, the center would have to market calves in excess of \$79 per cwt to achieve that goal, and in excess of \$78 per cwt from backgrounded calves.

[Table 3](#) suggests that in 1996, the DREC cattle enterprise came closer to meeting this goal than 1997. The 1997 loss of \$67.18 also needs to be discussed relative to other costs. [Table 4](#) indicates that very little differences existed between the feedlot performance in 1996 and 1997. Average daily gain, days on feed and feed efficiency were all similar. [Table 5](#) indicates that the steers marketed in 1996 were similar to the steers in 1997. The hot carcass price was only \$2.43 per cwt of hot carcass weight lower in 1997. Final value ([table 3](#)) was also similar, \$761.61 for 1996 and \$753.11 for 1997. The same was true for feed lot cost per pound of gain. The one difference was in receiving price per hundred weight and receiving weight. In 1996 cattle were only valued in at \$67.41, resulting in a feed lot enterprise profit, while in 1997 the cattle were valued in at \$81.00, resulting in a feedlot enterprise loss. Interestingly, these steers were actually valued at less than the going market in 1997. Both the local markets and Cattle-Fax had a mid point of \$85 for steers weighing 600 to 700 pounds. However, the price of \$81.00 was settled on to meet the feedlot break even sale price of \$72.72 at the time of placing the cattle on feed.

For the sake of discussion and sorting out the logic of receiving price, the following points are relevant. In a value based market, our target is still hot carcass weight, but in those cases where individuals do not carry full ownership of the pen, they simply need assurance that an unfair portion of the profit or loss is negotiated away. In regards to the matter of price negotiation to establish a retained ownership split between the owner and feed yard, the definition of a delivered price versus the average price which is reported at the local market or through Cattle-Fax is not well understood. The DREC paid \$15.52 per calf for transportation in 1996 ([table 4](#)) and \$18.20 in 1997 and split the total shrink of 7.32% in 1997 with the feed yard to determine pay weight. Each party sharing in half is often utilized within the industry resulting in a standard of 3% to 4% for each party. The average price may be more reflective of the current value of the calves however the value needs to be adjusted for transportation and shrink. The delivered price will ultimately result in a lower value.

Regardless of shrink, fill, price, or transportation, the same question persists, "as a producer accepts that the end product will ultimately determine the true value of the calf, then how is a fair interim price achieved in a non-value based commodity market?". Therefore, negotiation between the producer and the feed yard must result in an

acceptable receiving price, often only agreed upon with a hand shake. [Table 3](#) indicates that the 1996 average receiving price was \$67.41 and 1997 was \$81.00. Both these prices were settled based on local average price, transportation costs, feed yard breakeven and the desire of DREC to obtain data on finished cattle.

Given the documented values presented in tables [3](#), [4](#) and [5](#), DREC developed goals established to provide guidance in financial performance and cattle performance in the feed yard and on the rail. These goals can not directly encompass all the genetic and managerial questions such as, "Were the calves weaned at the right age?", "Were the calves backgrounded for the right number of days?", "Should the calves be fed at a greater rate of gain?", or "Did net return change as hot carcass weight, yield grade and quality grade changed?". These and other questions will be explored as the data base grows and hopefully these answers will result in a positive net return back to the operation. As the data comes full circle, the genetic and management changes need to be guided by the operation's goals.

In conclusion, these cattle were source verified back to the cow/calf operation and the resulting weaning, feedlot, carcass and health data returned started a benchmark data set for the operation. These data aided in setting DREC goals which were set based upon realistic bench marks attained by proper data analysis and therefore should be reachable. These cattle represent genetics that are reflective of the current beef industry and the goals set are achievable within the beef industry.

IMPLICATIONS

A well documented and defined herd health program allows the feedlot operator to better document health records, avoid treatment residues and reduce injection site blemishes. These same advantages carry on through the packer improving product quality and increasing marketability. DATALINE actually provides a model for future producer motivated change.

DATALINE allows every segment of the beef industry chain to source verify the product throughout development. This electronic connection adds accountability to the CHAPS beef cattle network securing needed data for cow-calf producers. This data completes a circle of communication and gives the cow-calf producer the knowledge to make management changes which affect profitability, improve product quality and insure consumer safety.

Most producers concerns are economically driven. DATALINE becomes the vehicle which serves up more than economic opportunity. Outside of environmental and food safety mandates, economic opportunity is the driving force within the beef industry. Source verification is what consumers are seeking and the overall outcome is that DATALINE allows producers to meet this need. Cow/calf producers will have the assistance in establishing and completing a professional database which includes herd performance records from conception through the carcass, sire and dam production records to better evaluate genetics and improved health systems. These data allow the establishment of new goals and the adjustment of present goals within the cattle industry.

CONCLUSION

This program demonstrates cattle can be source verified back to the cow/calf operation, resulting in benchmarks for weaning, feedlot, carcass and health traits and the subsequent establishment of realistic reachable goals that guide the management of cattle enterprises provided a person is willing to accept the increased risks and associated stress.

Table 1. Beef Cow 1997 FINPACK Financial Analysis for DREC through the North Dakota Farm and Ranch Business Management Program.

Year	Average Number of Cows	Gross Returns Per Cow	Direct Expenses Per Cow	Overhead Expenses Per Cow	Background Expenses Per Cow	Total Expenses Per Cow	Net Return Per Cow ^{ab}
1997	313	\$473.79	\$246.00	\$88.57	\$63.43 ^b	\$398.00	\$79.79
DREC	313	\$475.00					\$95.85

a) Net Return is return to labor, management and capital for cow-calf and backgrounding enterprises.

b) An estimated \$70.40/calf (128 lbs gain from weaning to shipping at \$55/cwt gain) is included for the cost of backgrounding the calves prior to shipping. The quantity (\$70.40 times 282 calves) is divided by 313 cows to estimate the cost per cow.

Table 2. Beef Calf Performance for DREC through the North Dakota Beef Cattle Improvement Association CHAPS Program.

Year	Number of Calves Weaned	Calf Death Loss	Average Weaning Weight	Average Weaning Age	Breakeven Price/Cwt at Weaning	Breakeven Price/Cwt after 45 day Background	Total Expenses Per Calf
1996	308	2.5%	522	207	NA	NA	NA
1997	282	12.4%	542	223	\$68.51	\$65.93	\$441.75
DREC	300	4.0%	563	202	\$62.00	\$63.36	\$415.00

a) Net Return is return to labor, management and capital.

b) An estimated \$70.40 (128 lbs gain from weaning to shipping at \$55/cwt gain) is included for the cost of backgrounding the calves prior to shipping.

Table 3. Calf Receiving and Final Values and Net Return for 1996 and 1997 DREC Steer Calves.

Year	N	Receiving Weight	Receiving Price/Cwt	Receiving Value/Hd	Final Weight	Final Price/Cwt	Final Value per Calf	Total Net Return per Calf ^a
1996	159	642	\$67.41	\$432.77	1110	\$69.13	\$761.64	\$57.13
1997	127	671	\$81.00	\$543.51	1139	\$66.12	\$753.11	\$(67.18)
DREC		655	\$70.99 ^b	\$465.00	1150	\$69.56 ^b	\$800.00	\$150.00 ^b

a) Includes costs of those steers that died and sold as realizers.

b) Price/Cwt is set to return \$75 at weaning, \$25 at backgrounding, and \$50 at final harvest for a total of \$150.

Table 4. Feedlot Performance for 1996 and 1997 DREC Steer Calves.

Year	N	Receiving Weight	Final Weight	Feedlot Average Daily Gain	Days on Feed	Feed Efficiency	Cost of Gain/Cwt	Trucking Cost/Hd
1996	159	642	1110	3.08	158	6.13	\$56.01	\$15.52
1997	127	671	1144	3.06	154	6.46	\$57.67	\$18.20
DREC		655	1150	3.10	160	6.20	\$55.00	

Table 5. Carcass Characteristics for 1996 and 1997 DREC Steer Calves.

Year	N	Hot Carcass Weight	Rib Eye Area	Final Yield Grade	Quality Grade ^a	Hot Carcass Price/Cwt ^b
1996	159	707	12.5	2.3	2.45	\$107.73
1997	127	716	11.6	2.8	2.34	\$105.30
DREC Goal		725	12.8	2.5	2.25	\$110.50

a) Quality Grade 1=Prime 2=Choice 3=Select 4=Standard; one dark cutter in 1997.

b) Hot Carcass price includes 2 realizers in 1996 and 1 realizer in 1997.

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