State of Iowa Feedlot Summary
15 Years of Benchmarking Feedlot Performance

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Summary and Implications
Fifteen years of closeout performance data was summarized to monitor trends in average daily gain and feed efficiency. Daily gain improved approximately 1% per year over the time period 1988-2002. Feed conversion improved approximately _ of 1% per year over the same time period.

Introduction
Benchmarking has become a key survival tool for cattle feeders across the US. Competitiveness among individual lots and regions, along with historically narrow margins have driven this trend. Benchmarking is not a new concept. Forward looking extension staff established the Iowa Feedlot Enterprise Record Program in the 1970's. This was an annual analysis of standardized yearly feedlot performance and cost. Records were brought into a central location for an annual evaluation and summarization, usually the county or regional extension office. This program began before microcomputers were a common implement on farm feedlots. Fifteen years of cost data from this system (1979-1991) was summarized in a previous ISU Beef Research Report (Loy, 1993).

As the microcomputer became more accessible and software for feedlot accounting and monitoring became available, newer more automated systems were developed. One system was the Iowa State University Feedlot Performance and Cost Monitoring Program. As part of this program, producers have the option of mailing key items of cost and performance from the closeout of each pen to ISU for summarization. The program has evolved, been upgraded and converted to windows, but some items have been consistently summarized for the benchmark report "State of Iowa Summary" since 1986. The data includes closeout information, not only from Iowa feeders but also from feeders in surrounding states that use the program in their day-to-day management. Also for a period of time the data included closeout information from Land O'Lakes,

which was utilizing a similar program and cooperating in data summarization. This report summarizes a few of the key closeout items over a period from 1988-2002. This extended timeline (15 years) allows trendlines to be established to track progress over more than a decade. References will be made to the previous summary of the Feedlot Enterprise Record (Loy, 1993) as well. Together, the data encompasses 25 years of closeout data from Iowa and surrounding states.

Materials and Methods
The data summarized in this report represents the averages of closeouts by class (starting weight) and by quarter. A few points represent data from a 6-month period during times when too few closeouts were received to produce a summary. The individual summaries are available online at: http://www.extension.iastate.edu/Pages/ansci/feedlot/. Linear regression of performance was conducted against time.

Results and Discussion
Figures 1 and 2 show the pay to pay average daily gain for steers starting on feed at 600-800 lb. and greater than 800 lb., respectively. The trend line represents the regression line for the improvement trend in average daily gain. The equation for figure 1 is $y = 0.0024x + 0.1242$, where y is the average daily gain in lb. and x is the average month and year for each data point. This suggests that average daily gain has improved approximately .03 lb per day each year over the 15 year period for this class of steers. The equation for the heavier steers (figure 2) is $y = 0.0018x + 0.9867$. This implies an improvement of approximately .02 lb. per day of daily gain each year. The trend line in figure 1 has an R^2 of .43. This means that the yearly trend explains 43% of the variation in average daily gain. Environmental conditions and other factors explain the remaining 57%. For the heavier steers the R^2 of the trend line is .23. Therefore, the heavier steers are more likely to be effected by weather and other conditions. This would be expected due to the shorter feeding period.

Figure 1. Fifteen year daily gain and trendline of 600-800 lb. steers
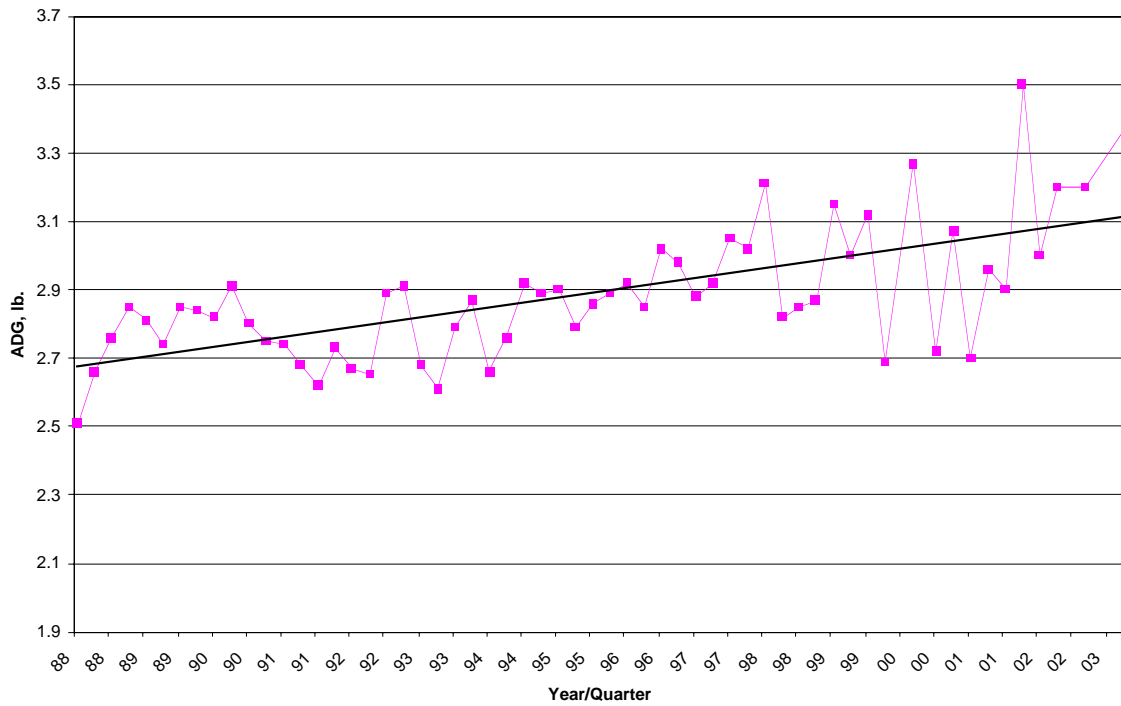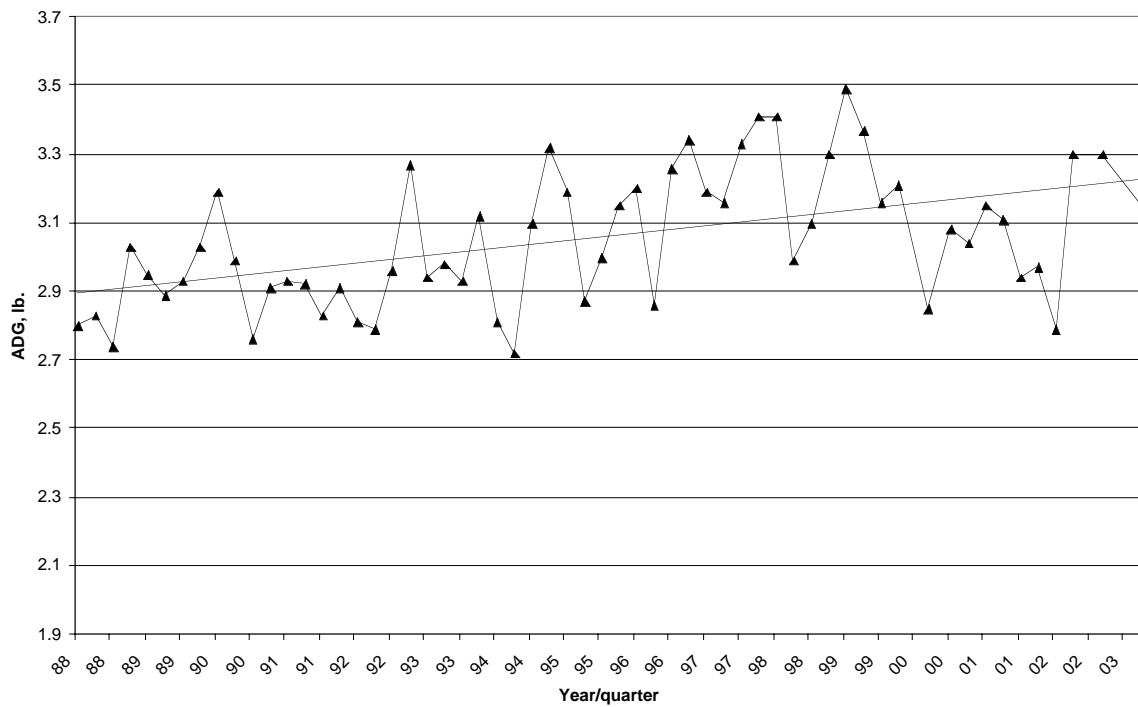

Figure 2. Fifteen year daily gain and trendline of >800 lb. steers

Similar trends in feed conversion are shown in Figures 3 and 4. Again, Figure 3 represents the quarterly summary and trend line of feed conversion on steers that started on feed at 600-800 lb. Figure 4 shows the same information for steers started at greater than 800 lb. The trendline represent the improvement in feed conversion over this 15 year period. The equation for this line in figure 3 is $y = -0.0029x + 10.85$, where y is the pay to pay feed conversion on a dry matter basis and x is the month and year of the summary. Therefore the average improvement per year in feed conversion efficiency is .035. This equation explains about 13% of the variation in feed conversion. The data for steers started on feed greater than 800 lb. is similar, but appears to have more quarter to quarter variation, as show in Figure 4. The similar equation for these heavier steers is $y = -0.0033x + 11.624$. This suggests that the average yearly improvement in feed conversion over this 15 year period is approximately .04 per year. In this instance approximately 13% of the variation in feed conversion is explained by the equation.

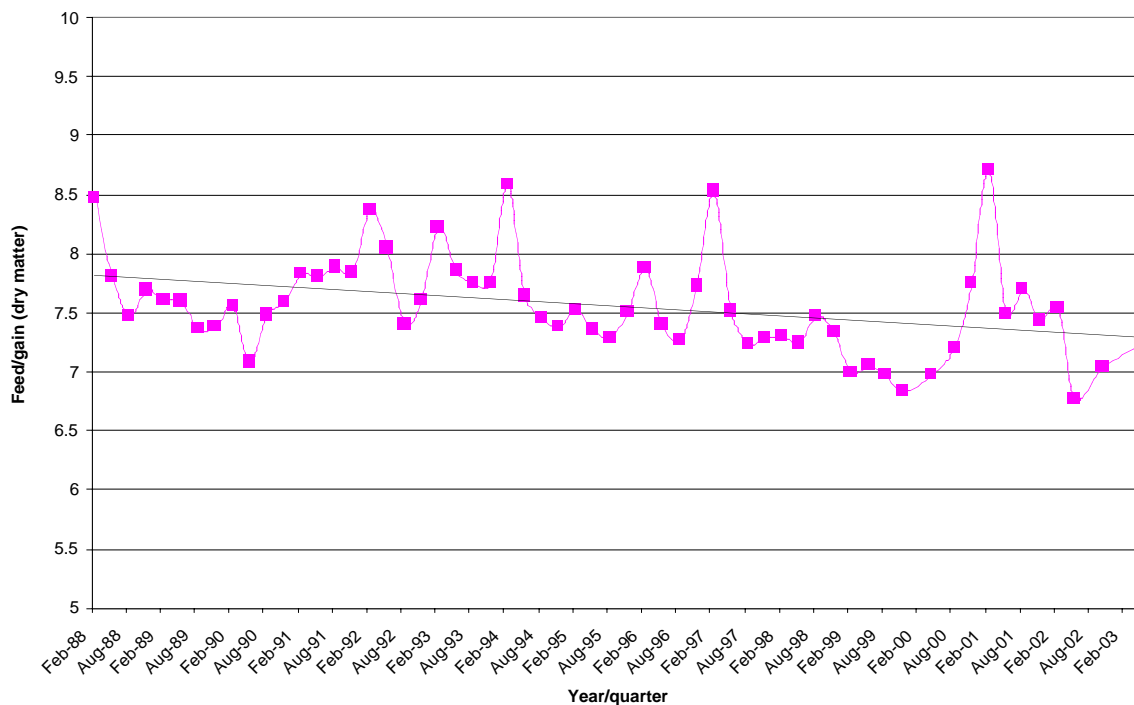**Figure 3. Fifteen year feed conversion of 600-800 lb. steers**

Figure 4. Fifteen year feed conversion of over 800 lb. steers