

A Six-Year Compilation of Carcass Traits from the Arkansas/Oklahoma State Fair

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Story in Brief

Carcass data were collected from 119 steers, 119 lambs, and 119 barrows slaughtered upon completion of the Arkansas/Oklahoma State 4-H and FFA Livestock show from 1999 to 2004. All animals were selected by each respective species' live animal evaluator to determine an official live animal ranking and premium auction sale order. Animals were then taken to a local processing facility for slaughter and carcass data collection. Live animal placing was considered to represent the top 20 individuals within each respective species per year. Significant increases in lean muscle were observed for pigs and lambs, as well a decrease in 10th and 12th rib fat thickness for pork, and lambs respectively, whereas beef carcasses tended to produce more variation in adjusted fat thickness, with minimal or no trends occurring over the six year period. While a trend of decreasing ribeye area was detected for beef carcasses, pork and lamb carcasses indicated significant and steady increases in loin eye area measured during the collection period. Similarly, a trend occurred for increased carcass weight of all three species, with a more notable linear trend occurring in pork and lamb carcasses.

Introduction

Carcass contests have been conducted over the years as an educational tool for youth livestock programs, and to provide quality, yield, and value information on their animals to youth livestock producers. Analysis of similar carcass data of barrows slaughtered from 1972 to 1984 originating from the Oklahoma City 4-H and FFA Livestock Shows (Luce et al.; 1985a) indicated that barrows had less desirable carcass traits from 1982 to 1984 than across all previous years (Luce et al., 1985b). Thus, the data from the Arkansas/Oklahoma State Fair Carcass Contest, from 1999 to 2004, were analyzed to determine the trends of carcasses traits from beef, lamb, and pork carcasses.

Experimental Procedures

The Arkansas/Oklahoma State Fair 4-H and FFA Livestock Show is conducted annually, and consists of 100 to 200 steers, 150 to 250 lambs, and 250 to 350 market hogs. The top twenty individual animals within each species, as selected by the live animal evaluator, are eligible for a premium auction and then slaughtered each year.

Animals (20/species/yr) were slaughtered at Garner Abattoir and Meat Processing, Van Buren, Ark. according to USDA-approved humane slaughter procedures. Beef and lamb carcasses were ribbed between the 12th and 13th ribs and allowed to bloom for 15 min, whereas pork carcasses were ribbed between the 10th and 11th ribs to assist data collection. Carcass measurements were collected by experienced University of Arkansas personnel and assessment of carcass weight, backfat thickness, loin eye/ribeye area, 10th or 12th rib fat depth, internal fat percentage, lean muscle color, texture, firmness, and quality and yield grades were recorded (USDA; 1989a, 1989b, 1985). Backfat thickness and loin eye area for pork carcasses were adjusted each year to a standard of 230 lb using recommend adjustments from the National Swine Improvement Federation (NSIF, 1988). Data were analyzed using the GLM procedure of SAS (SAS Inst., Inc., Cary, N.C.). Means were generated using

LSMEANS and separation was performed using the PDIF option. Trends were observed for significance via the CONTRAST option using coefficients and divisors for orthogonal comparisons as described and outlined by Steel et al. (1997)

Results and Discussion

Average backfat thickness of pork, as well as fat thickness for beef and lamb carcasses, for each year (1999 to 2004) is displayed in Figure 1. Differences occurred among years ($P < 0.05$) for all species (beef, lamb, pork) with a more severe decrease in backfat resulting in leaner animals from 2001 to 2002.

There were also noticeable differences ($P < 0.05$) in loin eye/ribeye area for all species, with increasing trends occurring steadily each year for lamb carcasses (Figure 2). Pork carcasses tended to increase in loin eye area from 2000 to 2003, whereas beef carcasses showed a slight, but significant decrease in ribeye area throughout the period (Figure 2). Yield grades are used to estimate the percentage of carcass weight in, closely-trimmed retail cuts and, external fat as increases, the percent of retail cuts will decrease. Yield grade differences ($P < 0.05$), were evident within species where a more linear trend occurred for lamb carcasses from 2001 to 2004; whereas, beef carcasses showed more variation from year to year (Figure 3).

Beef carcass weights showed the most variation between years of all three species (Figure 4). Although no significant trend was present, carcass weight varied from year to year with a sharp decrease in weight from 2001 to 2003, with the most variation in carcass weight of beef cattle occurring from 2003 to 2004. Lamb carcasses tended to show a slight linear increase in carcass weight; nevertheless, a significant ($P < 0.05$) increase was noted for lamb carcasses evaluated from 1999 to 2004 (Figure 5). Weight of pork carcasses differed ($P < 0.05$) among periods and showed a linear trend with less variation from period to period than beef or lamb carcasses (Figure 6). For the 6-year period, data for pork and lamb carcass weights showed a linear increase indicating that animals selected on a live animal basis are of higher body weight or physiological maturity.

Fat depth of pork carcasses is the measured thickness, including

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skin of subcutaneous fat at the 10th / 11th rib interface at 3/4 ventral length of the loin eye muscle. Differences ($P < 0.05$) were present with pork carcasses decreasing in 10th rib fat depth over time (Figure 7). These data for all species indicate that significant improvement within pork and lamb carcass traits has occurred in recent years, while beef carcasses tended to display more variation on a year-to-year basis.

Implications

While these data cannot be considered as uniform representative samples of all beef, lamb, and pork animals that are slaughtered on a yearly basis, they do provide some visual explanation to trends that have occurred within each respective species' industry. Continual evaluation of carcass trends can be used to assist live animal evaluators in support of their preferences within the exhibition industry of livestock in youth programs.

Literature Cited

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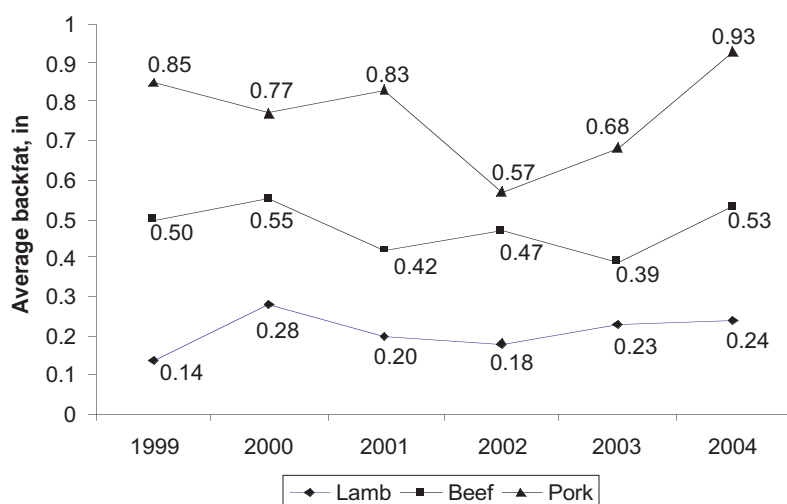


Fig. 1. Average adjusted backfat thickness for beef, lamb and pork carcasses 1999 – 2004.

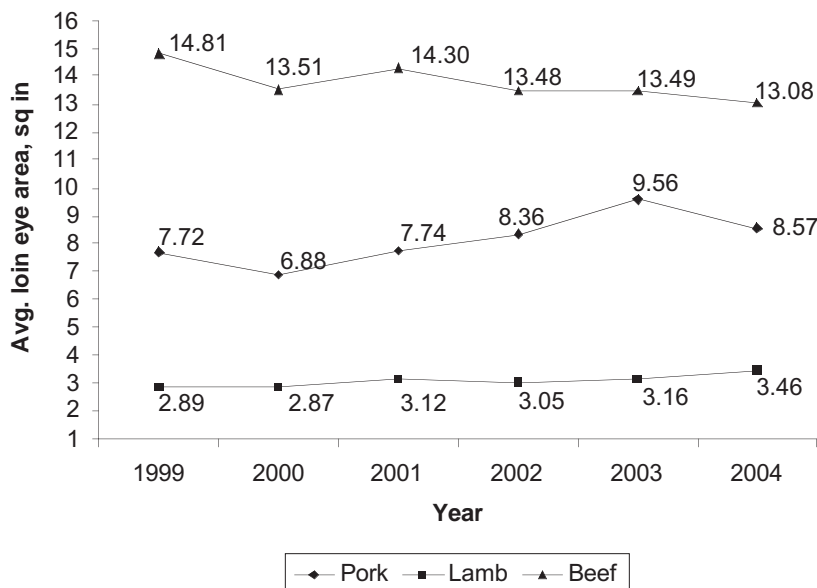


Fig. 2. Average loin eye areas for beef, lamb and pork carcasses 1999 – 2004.

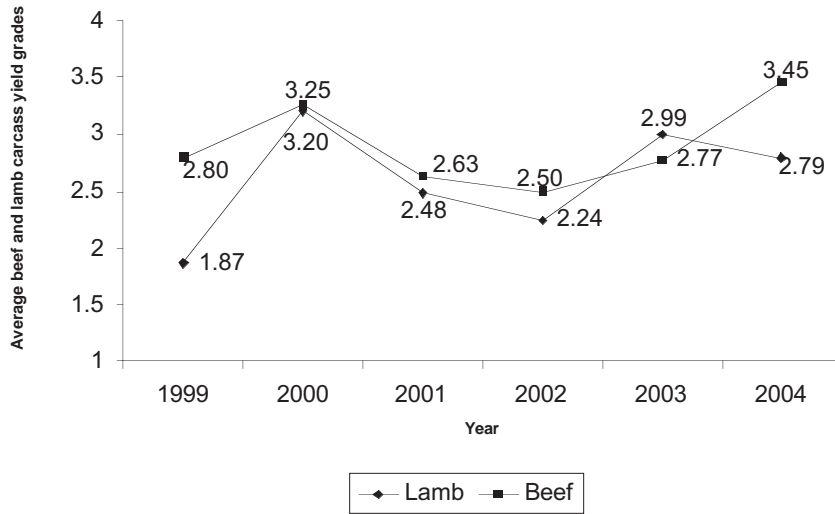


Fig. 3. Average yield grades for beef and lamb carcasses 1999 – 2004.

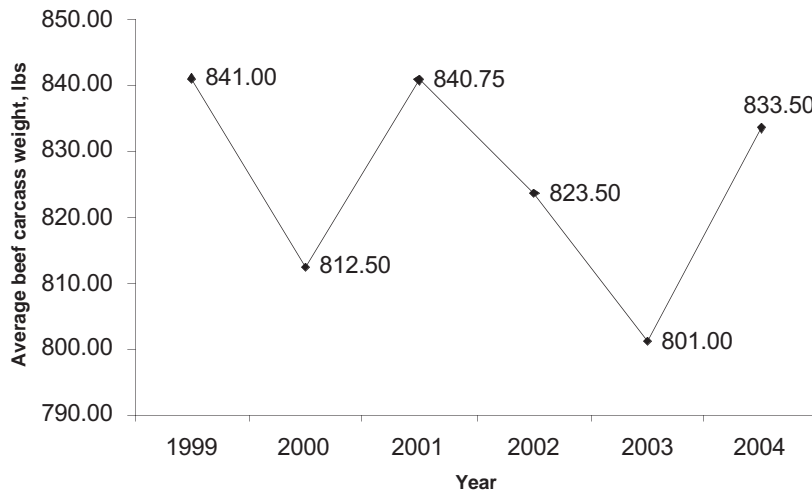


Fig. 4. Average carcass weights for beef carcasses 1999 – 2004.

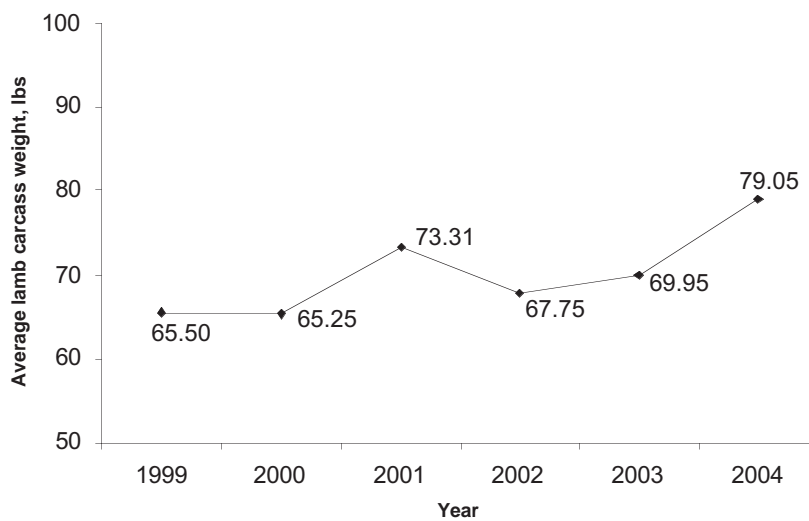


Fig. 5. Average carcass weights for lamb carcasses 1999 – 2004.

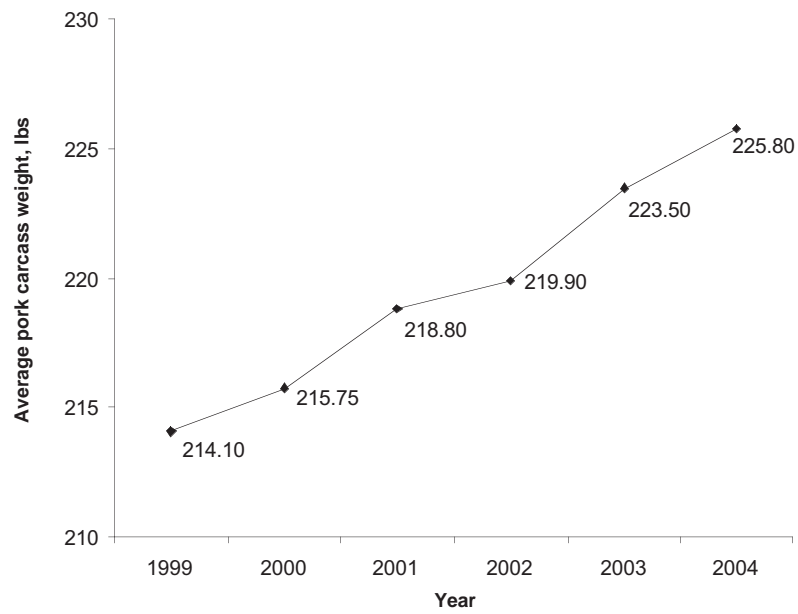


Fig. 6. Average carcass weights for pork carcasses 1999 – 2004.

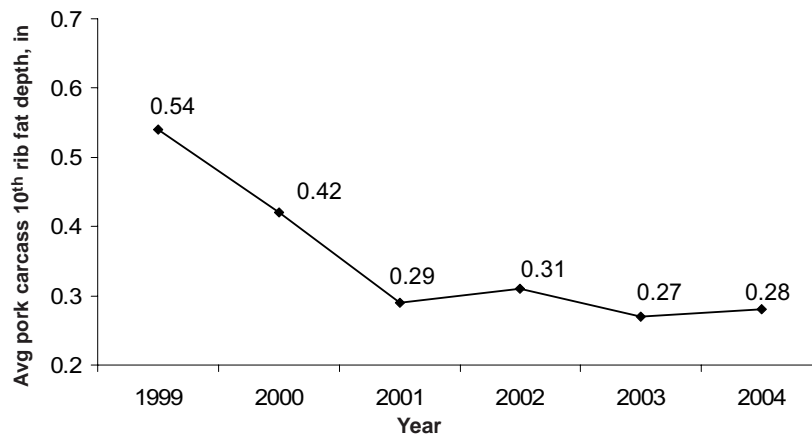


Fig. 7. Average 10th rib fat depth for pork carcasses 1999-2004.