

BOXED BEEF YIELDS OF HOLSTEIN AND CROSSBRED STEER CARCASSES

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SUMMARY

Holstein ($n=167$) and crossbred ($n=212$) steers were fed a high concentrate diet in a Central Florida commercial feedlot for 117 and 119 days, respectively. From these carcasses, ten Holstein and ten crossbred carcasses were selected by matching yield grade and evaluated for boxed beef yields. Crossbred carcasses had more subcutaneous fat (.4 in. vs .1 in.) and larger ribeye areas (12.0 in^2 vs 9.6 in^2) than Holstein carcasses. Crossbred steer carcasses cut out 1.2% greater boxed beef yield, 80% more beef trimmings from the major cuts and 3.4% less bone than Holstein steer carcasses. There was no difference ($P>.05$) in percent fat trim primarily due to the 2.7 average yield grade of the 20 carcasses fabricated. Wholesale trimmed rib and loin percentages from crossbred steer carcasses were higher than from Holstein carcasses. However, no difference ($P>.05$) was found between Holstein and crossbred steer carcasses for lean yield or lean trim percent from major wholesale chucks or rounds. Crossbred steers had greater ($P<.05$) percentages for boxed beef yield and lean trim due to lower ($P<.05$) percentages of bone trim in all of the major and minor wholesale cuts.

INTRODUCTION

Florida's beef cattle industry produces and markets, at least 550,000 crossbred type calves each year for shipment to south-central U.S. feedlots. Around 80,000 Holstein steer calves are produced annually by Florida dairy herds. Increased transportation costs have placed the Florida producer at a disadvantage in marketing calves. Accordingly, interest has developed in the growing and finishing of some of the larger, faster growing calves in feedlots within Florida. Florida's packing industry needs a larger and steadier supply of finished steers and heifers to meet slaughter capacity and beef sales requirements. However, the animals must not only be finished efficiently, but also the carcasses produced must have acceptable quality and cutability attributes. Boxed beef yields of carcasses from crosses of most beef breeds are well known in the packing industry, however, more information is needed on the boxed yields of Holstein type carcasses. Lack of cut-out values of such carcasses limits the precision of the pricing mechanism. Furthermore, boxed yields should have a significant bearing on the profitability of finishing Holstein type steers for the boxed beef trade.

OBJECTIVES

The purpose of this study was to compare boxed beef yields obtained on carcasses from Holstein and crossbred steers.

PROCEDURE

Following a 24-hour chill, carcasses were ribbed and evaluated for USDA quality and yield grade by Federal graders. The right side from ten Holstein and ten crossbred steer carcasses were obtained by selecting Holstein and crossbred carcasses of identical or near identical (+,1) final yield grades for evaluation of box beef yields. Carcass fabrication (cutting) was conducted at a commercial beef boxing plant in Central Florida. Initially, the sides were fabricated into major (round, loin, rib and chuck) and minor (flank, short plate, brisket and foreshank) wholesale cuts. Each major and minor wholesale cut was trimmed of fat in excess of 1 inch and fat was beveled to 1/2 inch on exposed edges.

RESULTS AND DISCUSSION

Data in Table 1 characterize the two groups of carcasses used in this study. Among carcass characteristics, ribeye area and fat over eye (10 carcasses per group) was highly variable, while other traits measured from the 10 carcasses were much less variable. Holstein carcasses had less fat over the ribeye, and smaller ribeye areas than did crossbred carcasses.

TABLE 1. CARCASS YIELD GRADE CHARACTERISTICS^{a, b}

| | Breed Type | | | |
|----------------------------------|------------|------------|-----------|-------------|
| | Holstein | | Crossbred | |
| | Mean | Range | Mean | Range |
| Hot carcass wt. ² lb. | 621 | 536 - 698 | 646 | 570 - 685 |
| Ribeye area, in ² | 9.6 | 8.3 - 11.4 | 12.0 | 10.7 - 14.8 |
| Fat over eye, in. | .1 | .1 - .3 | .4 | .3 - .5 |
| KPH, % ^c | 2.6 | 2.5 - 3.0 | 2.4 | 2.0 - 2.5 |
| Yield grade | 2.7 | 2.1 - 3.1 | 2.7 | 2.0 - 3.0 |

^a Sample size - 10 per breed type.

^b Data obtained from right side of carcass.

^c KPH = Kidney, pelvic and heart fat percentage (estimated).

Mean percentage yields for the major wholesale cuts and their respective yields of lean trim, fat trim and bone are presented in Table 2. Holsteins had a higher ($P < .05$) percentage bone from the chuck, rib and round, a lower ($P < .05$) percentage lean trim of rib and a lower ($P < .05$) percentage diamond cut loin (bottom sirloin removed) when compared to crossbred type carcasses. Breed type had no effect ($P < .05$) on the percent of boneless chuck, clod, cubing meat or lean trim from the wholesale chuck when expressed as a percentage of the side weight. Similarly breed type did not affect ($P < .05$) the percentage of boneless round or lean trim from the wholesale round when expressed as a percentage of the side weight. These data are of economic importance to beef packers and processors, since wholesale chucks and rounds from Holstein or cross-bred carcasses did not differ ($P > .05$) in percentages of lean cuts when expressed on a percentage of the side weight basis. No significant differences was noted in percentage fat trim primarily due to the carcass selection procedure.

TABLE 2. BOXED BEEF YIELDS^{a, b} OF MAJOR WHOLESALE CUTS

| | Breed Type | | SE |
|-------------------|--------------------|--------------------|-----|
| | Holstein | Crossbred | |
| Chuck | | | |
| Boneless chuck, % | 12.4 | 12.8 | .23 |
| Clod, % | 5.8 | 5.7 | .11 |
| Cubing meat, % | .5 | .4 | .03 |
| Lean trim, % | 2.0 | 2.3 | .13 |
| Fat trim, % | .5 ^c | .2 | .13 |
| Bone, % | 6.6 ^c | 5.1 ^d | .10 |
| Rib | | | |
| Trimmed rib, % | 6.29 ^c | 6.96 ^d | .14 |
| Back ribs, % | 1.11 ^c | 1.00 ^d | .04 |
| Lean trim, % | .70 ^c | 1.10 ^d | .09 |
| Fat trim, % | .20 | .28 ^d | .04 |
| Bone, % | .45 ^c | .34 ^d | .02 |
| Loin | | | |
| Diamond loin, % | 13.89 ^c | 14.72 ^d | .23 |
| Fat trim, % | 2.77 | 2.29 | .25 |
| Round | | | |
| Boneless round, % | 14.51 | 14.59 | .16 |
| Lean trim, % | .64 | .58 ^d | .04 |
| Fat trim, % | .32 ^c | .48 ^d | .07 |
| Bone, % | 5.18 ^c | 3.94 ^d | .09 |

^a Percentages are based on side weight.

^b Each group contained 10 sides.

^{c, d} Means with different superscripts are significantly different (P<.05).

Presented in Table 3 are percentage yields for the minor wholesale cuts where significant differences occurred. Holstein carcasses had a higher (P<.05) percentage of plate and brisket bone as compared to crossbred carcasses. No other significant differences were noted for yields of the minor wholesale cuts.

TABLE 3. PERCENTAGE^a OF BONE FROM PLATES AND BRISKETS

| | Breed Type | | SE |
|----------------------|------------------|------------------|-----|
| | Holstein | Crossbred | |
| Plate bone trim, % | 1.5 ^B | 1.3 ^C | .05 |
| Brisket bone trim, % | 1.0 ^b | .7 ^c | .06 |

^a Percentages are based on side weight; each group contained 10 sides.

^{b, c} Means with different superscripts are significantly different (P<.05).

Mean values for overall boxed beef yields for Holstein and crossbred carcasses are presented in Table 4. Crossbred carcasses had higher ($P < .05$) yields of boxed beef from the major cuts, boneless brisket and lean trim from the major cuts. Holstein carcass had higher ($P < .05$) yields of total bone trim and lower valued miscellaneous cuts (i.e., back ribs, lifter meat, etc.). From these data, it can be concluded that differences do exist in boxed yields of major and minor cuts among carcasses of different breed type. Although Holstein carcasses were comparable to crossbred carcasses in percent boneless chuck and round, they had a distinct disadvantage in cutability value for box beef yield due to a higher ($P < .05$) percent bone than crossbred carcasses. Because boxed beef yields determine the marketing strategy and ultimately influences the economic value of the carcass, special consideration should be paid to the breed type of the carcass, especially dairy breeds such as Holsteins.

TABLE 4. CARCASS YIELDS^a OF BOXED BEEF

| | Breed Type | | SE |
|---------------------------------|--------------------|--------------------|-----|
| | Holstein | Crossbred | |
| Boxed beef yield, | | | |
| major cuts, % | 53.08 ^b | 54.25 ^c | .34 |
| Brisket, boneless, % | 2.61 ^b | 2.93 ^c | .10 |
| Flank steak, % | .52 | .53 | .02 |
| Lean trim, major cuts, % | 5.67 ^b | 6.47 ^c | .22 |
| Lean trim, minor cuts, % | 1.60 | 1.69 | .09 |
| Fat trim, % | 6.01 | 5.90 ^b | .31 |
| Kidney, % | .37 ^c | .25 ^b | .03 |
| Total bone trim, % _d | 15.45 ^c | 12.06 ^b | .25 |
| Miscellaneous cuts, % | 15.20 ^c | 14.57 ^b | .20 |

^a Percentages are based on side weight; each group contained 10 sides.

^{b, c} Means with different superscripts are significantly different ($P < .05$).

^d Back ribs, lifter meat, etc.