Published February 1, 2019

2017 Reciprocal Meat Conference – Meat and Poultry Processing, Ingredient Technology and Packaging

Meat and Muscle Biology™

The Effect of Carcass Sorting Specifications on Boxed Beef Subprimal and Retail Cut Variation

T. M. Loyd*, T. E. Lawrence, and T. J. McEvers

Agricultural Sciences, West Texas A&M University, Canyon, TX, USA

Keywords: boxed beef, marbling, retail yield, uniformity, WBSF
Meat and Muscle Biology 1(3):48 **doi:10.221751/rmc2017.045**

Objectives

Inconsistencies within the boxed beef supply have led to increased cost and variability for consumers. Our goal was to quantify adherence to Institutional Meat Purchase Specifications (IMPS) guidelines and differences in quality and yield parameters including marbling score (MARB), retail yield (RY, %), and Warner-Bratzler shear force (WBSF, kg).

Materials and Methods

Five boxes each of USDA Choice (CH), custom sorted (CS), and Certified Angus Beef (CAB) subprimals (SUB) were utilized: IMPS 112A Lip-On Ribeye Roll, 120 Deckle-Off Brisket, 180 Strip Loin, and 184 Top Sirloin Butt. Six days' of USDA video image analysis data was collected 1 wk prior to CS carcass selection and used to calculate selection criteria ranges for hot carcass weight, calculated yield grade, MARB, ribeye area, and backfat thickness of 790 to 887 lbs., 2.31 to 3.22, 316.60 to 437.73, and 11.24 to 14.85 $in^{2,}$ respectively. Each SUB was cut into 2.54-cm thick steaks, weighed, assessed for adherence to IMPS, trimmed to spec if needed, and re-weighed post trimming to calculate RY.

Results

Means of ribeye box weight (BW), SUB weight (SUBW), MARB and WBSF differed across groups ($P \leq 0.01$), with RY being similar ($P = 0.24$). Differences in BW and SUBW indicated CH and CAB were heavier than CS ($P < 0.05$), with CS also having the least MARB ($P < 0.01$). Results indicated WBSF for CH was improved compared to CS ($P < 0.05$). Number of retail cuts and specifications for tail length, subcutaneous fat thickness (SFT), and presence of bone, *ligamentum nuchae*, scoring and intercostal meat (IM) were different across groups ($P < 0.01$). Means of brisket SUBW, MARB, and WBSF differed ($P \leq 0.04$), with BW and RY being similar ($P \geq 0.13$). Differences in SUBW indicated CAB was heavier than CS ($P = 0.04$). All groups differed in MARB ($P \leq 0.01$), with CS having improved WBSF compared to CH ($P = 0.03$). Specifications including visibility of the muscle seam, and presence of the deckle, bone, and scoring differed ($P < 0.01$). Means of striploin BW, RY, MARB, and WBSF differed ($P < 0.04$), with a SUBW trend calculated ($P = 0.08$). Differences in BW indicated CS was heavier than CH and CAB ($P < 0.05$). All groups differed in MARB ($P < 0.01$), with CS exhibiting improved WBSF compared to CH and CAB ($P \leq 0.01$). Although RY differed among all groups ($P = 0.04$), only CH and CAB tended to be different ($P = 0.07$). Number of retail cuts and specifications for tail length, SFT, and presence of bone, scoring, and IM were different across groups ($P < 0.01$). Means of Sirloin BW, SUBW, *gluteus medius* MARB, *biceps femoris* weight and MARB, and total RY were different across groups ($P < 0.05$), with *gluteus medius* weight exhibiting a calculated trend ($P = 0.06$). There were no differences in *gluteus medius* WBSF, or *biceps femoris* WBSF ($P > 0.15$). Differences in BW and SUBW indicated CH and CS were heavier than CAB ($P < 0.02$), with all groups being different for total RY. Means of *gluteus medius* MARB indicated CH was improved compared to CS ($P = 0.02$) with a tendency for improvement compared to CAB ($P = 0.07$). *Biceps femoris* MARB for CH and CAB was greater than CS ($P < 0.01$). Number of retail cuts and specifications for non-square cuts at the cranial or caudal ends, *gluteus medius* exposure, SFT and presence of scoring were different across groups ($P < 0.01$).

Conclusion

These results indicate a potential for carcasses to be sorted into more homogenous groups to improve uniformity and adherence to IMPS.

