

<b>Project Title:</b>	Innovative Wholesale Carcass Fabrication and Retail Cutting to Optimize Beef Value
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### Background

Recent industry-driven efforts have been successful in optimizing the value of existing wholesale cuts, especially from the chuck and the round (i.e. “Beef Value Cuts”). Processors have been able to create greater carcass value by using more of an individual muscle fabrication style for existing wholesale cuts. Traditional wholesale fabrication methods however, may hinder more widespread application of individual muscle fabrication. Much of the basis for current wholesale cut fabrication is based on tradition, rather than a desire to optimize the use of cuts for end users.

This project was conducted in two phases. The first phase focused on altering conventional carcass fabrication in some key areas to create better utilization of individual muscles and muscle groups. By doing this, there was also an opportunity for the researchers to create retail cutting data for any variants of existing wholesale cuts.

Past research on retail yield and fabrication times of beef led to the development of the Computer Assisted Retail Decision Support (CARDS) program, which serves as a reference for retailers and foodservice operators in purchasing and merchandising meat products. During the second phase of this project, researchers performed an evaluation of cuts included in the present version of Beef CARDS.

Specifically, the objectives of this comprehensive project were:

- Examine alternate fabrication styles to allow for greater utilization of individual muscles and muscle groups.
- Obtain retail cutting data for any variants of existing wholesale cuts and compare to traditional styles.
- Perform a thorough evaluation of cuts included in the present version of Beef Computer Assisted Retail Decision Support (CARDS) program in order to pinpoint data “holes” and/or inconsistencies.
- Obtain current yield and time data for a new updated list of subprimals.
- Improve and expand existing Beef CARDS program for the benefit of the retail and foodservice industries.

### Methodology

#### *Phase I*

Thirty beef carcasses were selected from a commercial processing facility over the course of three weeks and transported to the Rosenthal Meat Science and Technology Center at Texas A&M University for subsequent fabrication. Carcasses were selected based on the following attributes:

- Sex (steer)

- Weight (approximately 325 to 390 kilograms)
- USDA quality grade (Choice and Select)
- USDA yield grade (2 and 3)

Minimal slaughter/dressing defects (e.g., incorrect splits, major fat tears, large bruises, excess trim) An equal mix of USDA Select and Choice, yield grade 2 and 3 carcasses were selected.

#### *Fabrication*

Carcasses were shipped in quarters and upon arrival at Texas A&M University were bagged in large polyethylene bags to minimize shrink and ensure freshness. Comparisons were made by fabricating one side of each carcass in a conventional manner, and the opposite in a more innovative method. Throughout fabrication, each subprimal and its corresponding lean trim, fat and bone components were weighed to ensure at least 99 percent recovery yield of each subprimal and then totaled for the entire quarter.

#### *Carcass Value*

Data collected during carcass fabrication were used to determine value differences that may have occurred between the two cutting styles. Subprimal and component prices used in the analysis were obtained primarily from the U.S. Department of Agriculture, Agricultural Marketing Service (USDA-ARS) from prices that were averaged over a three-year period. The subprimals that were generated from the innovative fabrication style did not correspond exactly to current cuts and thus would not have the same IMPS numbers. Those cuts would most likely be priced separately, so for this demonstration, the innovative brisket, shoulder clod, chuck roll ribeye roll, back ribs, blade meat, 2-piece top sirloin butt, round tip, and outside round flat were priced identical to their conventional counterparts. The *M. Serratus ventralis* was priced using the reported prices for Cap and Wedge meat.

#### *Retail Cutting Tests*

All subprimals generated in the carcass fabrication phase that were decidedly different due to cutting styles were immediately vacuum packaged, heat shrunk, boxed and held in refrigerated storage (2° C) for retail cutting analysis. Subprimals held for retail cutting evaluation included:

#### **Brisket (IMPS 120)**

Innovative version (*M. Pectoralis profundus*, *M. Pectoralis decendens* and *M. Pectoralis transverses*)

#### **Chuck roll (IMPS 116A)**

Innovative version (Chuck eye roll containing four rib sections similar to IMPS 116D chuck eye roll)

#### **Ribeye roll (IMPS 112A)**

Innovative version (Ribeye roll containing eight rib sections)

#### **Bottom sirloin, ball tip (IMPS 185B) and Round tip (IMPS 167A)**

Innovative version (*M. Quadriceps femoris* muscle group)

#### **Bottom round, flat (IMPS 171B) and Top sirloin, cap (IMPS 184D)**

Innovative version (Bottom round, flat and the top sirloin cap separated immediately proximal to the attachment at the tuber ischiadicum)

#### **Other**

Innovative version, which had no comparative subprimal from the conventional style (*M.*

*Serratus ventralis thoracis* and *M. Serratus ventralis cervicis*)

The above subprimals were fabricated into retail cuts by experienced retail meat industry cutters. Trained technicians timed the cutters during each phase of the cutting test and were also responsible for weighing the retail cuts, lean trim and fat to ensure that the combined total weight accounted for at least 99 percent of the initial subprimal weight. Purge loss was also accounted for by weighing the bags in which the subprimals were packaged.

### *Phase 2*

During this phase of the project, researchers performed an evaluation of cuts included in the present version of Beef CARDS. Beef subprimals representing USDA Low Choice and Select grades were obtained from a major beef processor. The 356 subprimals represented the normal weight variation and standard packer fat trim levels associated with commodity boxed beef. Tray-ready retail cuts were fabricated by trained retail meat cutters. Trained technicians recorded purge loss and summed together all fabricated components to ensure that at least 99 percent of the beginning subprimal was maintained throughout the test. All retail cuts were trimmed to an eighth of an inch, unless otherwise specified. A total processing time was calculated by combining the time it took to retrieve the subprimal from the bag and to produce a tray-ready retail cut (included removal of all external and seam fat, connective tissue and separation of individual muscles).

### **Findings**

Data found in Phase 1 showed carcass value could be significantly increased when using alternative carcass fabrication styles as compared to traditional methods. In this project, the innovative fabrication increased subprimal yield and value for both the forequarter and hindquarter. Based on pricing information used in this analysis, an approximate increase of \$14 per carcass was obtained.

In Phase 2 of this project, researchers found that generally, Select subprimals had higher saleable retail yields than Choice subprimals. Select subprimals had less trimable fat than Choice subprimals, and differences in retail yields appeared to follow these factors. Very few significant differences were observed for processing times between USDA quality grade groups.

### **Implications**

Innovative fabrication methods demonstrated in Phase 1 offer opportunities to add additional value to underutilized muscles. More work should be done to solicit commercial applications of this information. The information collected in Phase 2 of this project will be used to update and expand the CARDS program for retail and foodservice applications.