

PE10.06 Alternative fabrication strategies for the beef chuck roll 413.00

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Abstract— The beef chuck roll is a large (9.3 kg) subprimal cut manufactured in the United States. It consists of the portion of the beef chuck (shoulder) that medial to the scapula, from the fifth rib to the neck and includes all or part of the following major muscles: m. longissimus thoracis, m. longissimus capitus et atlantis, m. rhomboideus, m. spinalis dorsi, m. complexus, m. multifidus dorsi, m. serratus ventralis, and m. splenius. Typically, U.S. fabrication at retail is to remove 2-3 steaks from the caudal end of the cut and to merchandise the remaining portions as pot roasts. Alternative fabrication strategies were developed and economic returns from the various strategies were estimated. Results indicate considerable economic return is available when muscles and muscle groups are cut into specific cuts that can be merchandised separately.

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Index Terms— Beef chuck, Value-added cuts, Cutting yield

I. INTRODUCTION

THE beef chuck roll in the United States consists of the portion of the beef chuck (shoulder) that lies under the scapula, from the fifth rib to the neck and includes all or part of the following major muscles: m. longissimus thoracis, m. rhomboideus, m. spinalis dorsi, m. complexus, m. multifidus dorsi,

m. serratus ventralis, and m. splenius. The chuck roll can be further fabricated into a chuck eye roll (which contains portions of the m. longissimus thoracis, m. spinalis dorsi, m. complexus, m. multifidus dorsi, and the m. longissimus capitus et atlantis) and the underblade (containing m. rhomboideus, m. serratus ventralis, and m. splenius).

Typically, retail fabrication of the chuck roll involves removal of 2-3 chuck eye steaks from the caudal end of the chuck eye roll and to merchandise the remaining portions of the chuck roll as pot roasts. Consumers have repeatedly shown a willingness to pay for convenience and consistency in eating quality. Cutting beef in a way to create single-muscle cuts or cuts that are consistent for a popular recipe should return value to the industry. Although the chuck roll may be cut into a chuck eye roll and an underblade (defined below), this seldom occurs in the United States because the value-added opportunities have not been well studied. This research was conducted to determine the potential economic impact of alternative cutting strategies for the beef chuck roll.

II. MATERIALS AND METHODS

Data from 8 chuck rolls were used to construct a spread sheet depicting the expected yield of cuts and economic values that result from three different cutting styles. Style 1 was the traditional method, where a few chuck eye steaks were removed from the caudal end of the chuck eye roll and the remainder of the chuck roll was cut into chuck roasts, stew meat and trim for grinding. Style 2 converted the chuck eye roll into boneless country style ribs and the underblade into steaks from the m. serratus ventralis (called the Denver cut), a steak from the m. splenius (called the Sierra cut), stew meat and trim for grinding. Style 3 converted the chuck eye roll into chuck eye steaks, boneless country-style ribs, and a chuck eye roast (called America's beef roast). The underblade was cut as described for style 2. The Sierra cut has similar characteristics to a flank steak (m. rectus abdominus) and so was valued in a similar fashion. Denver cuts are rich in marbling and offer a strong, succulent flavor and a pleasurable eating experience.

After fabrication, data were used to calculate the gross margin return, retail value per kg, average cost per kg, per kg gross profit, and net margin percent. Time required to fabricate was recorded and labor costs were included in the calculations.

III. RESULTS AND DISCUSSION

Table 1 presents the cutting yields for the three fabrication styles that were studied. The traditional style yields 67% chuck roasts, which have relatively low value in the United States market. In style 2 the chuck roll yielded 37% boneless, country-style ribs and 21% Denver cuts. Both of these cuts are of greater value than the traditional chuck roast. Cutting style 3 provided a greater variety of cuts with even greater retail value in the United States.

The prices used in the calculations are provided in Table 2. Labor costs were estimated at \$18.00 per hour and a marketing cost of 5% of the retail price was included. These are estimated prices and would be expected to change over time. Even so, the differences in economic return are rather dramatic. The traditional cutting style resulted in gross profit of \$4.30 per kg while style 2 yielded \$5.46 per kg and style 3 resulted in \$5.99 per kg of gross profit. These prices include the cost of added labor. Clearly, there is substantial economic value in altering the way the beef chuck

is fabricated at retail in the United States. It is anticipated that the foodservice market would realize similar gains with these new approaches.

It is likely that individual muscles of the chuck eye roll have further potential that could be realized through single-muscle merchandising. Anecdotal evidence suggests these muscles are especially rich in flavor. Further research is needed to resolve fabrication and quality issues before recommendations can be made.

IV. CONCLUSION

Taking the time to cut the beef chuck roll into specific retail cuts rather than chuck roasts is economically valuable and offers strategies to increase retail profit in the meat department. Consumers gain additional benefits when beef cuts are identified with simple names that are easy to remember and that represent cuts that deliver consistent, desirable eating experiences.

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Table 1. Cutting yields (%) from three different fabrication styles for the beef chuck roll.

| Cut | Style 1 | Style 2 | Style 3 |
|---|-------------|---------|---------|
| | Traditional | Ribs | Diverse |
| Chuck roasts | 67.23 | | |
| Chuck eye roast | 10.50 | | 27.56 |
| Chuck eye steaks | | | 10.22 |
| M. splenius (Sierra cut) | | 5.97 | 7.11 |
| Country-style ribs | | 37.25 | 1.78 |
| M. serratus ventralis (Denver steaks) | | 21.42 | 20.44 |
| M. rhomboideus (stew meat) | | 6.99 | 9.33 |
| Stew meat | 8.40 | 6.41 | 8.00 |
| 80% lean trim | 8.40 | 12.29 | 8.89 |
| Fat trim | 0.00 | 2.19 | 0.00 |
| Unusable (connective tissue, shrink, purge, cut loss) | 5.47 | 7.48 | 6.67 |

Table 2. Cost assumption for calculation of value.

| Cut | Price, \$ per kg |
|---------------------------------------|------------------|
| Chuck roll | 3.19 |
| Chuck roasts | 9.45 |
| Chuck eye roast | 10.99 |
| Chuck eye steaks | 10.99 |
| M. splenius (Sierra cut) | 13.19 |
| Country-style ribs | 10.99 |
| M. serratus ventralis (Denver steaks) | 15.40 |
| M. rhomboideus (stew meat) | 8.79 |
| Stew meat | 8.79 |
| 80% lean trim | 7.25 |
| Fat trim | 0.00 |

Table 3. Value and gross margin provided by three different fabrication styles for the beef chuck roll.

| | Net margin \$ per kg | Net margin % | Retail value \$ per kg |
|-------------|-------------------------|-----------------|---------------------------|
| Style 1 | | | |
| Traditional | 4.30 | 51.11 | 8.85 |
| Style 2 | | | |
| Ribs | 5.46 | 56.02 | 10.24 |
| Style 3 | | | |
| Diverse | 5.99 | 59.46 | 10.59 |