Advancement in Beef Processing

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Advancements in beef processing have occurred due to available technology and the consumers' demand for higher quality products (products which meet the consumers' needs). Consumer needs is what drives new product development, resulting in new opportunities in all segments of the food industry.

This discussion will be directed to beef carcass fabrication, packaging and distribution, with less emphasis on slaughter techniques and carcass chilling.

The beef processor is making the transition of a commodity product to a value-added product. Let us consider consumption of red meats in the near future.

The solution to our problem of decreasing consumption of red meats is becoming clearer. The results of the National Consumer Retail Beef Study indicated that removal of surface fat can increase sales of beef and that consumers are willing to pay because the price/value relationship is improved.

The beef packer currently is in the midst of changing the trim specifications on subprimal cuts from 1-inch maximum fat cover to ½-inch maximum fat cover. Changing fat trim specification is resulting in re-evaluating the buying of live cattle, labor requirements and fat trimming techniques and rendering capabilities.

Our technology for fat removal is modern, can be done efficiently at the packer level and will make beef a better competitor in the protein market.

Along with change comes many *NEW* opportunities. Fat removal will bring a need for *improved* cooking methods – telling consumers how to use the product, and also a need to provide more technology in areas of marinating or flavoring systems to enhance juiciness and tenderness.

Muscle boning is and has been the trend in beef processing. Boxed beef was the beginning, but in the next few years more value-added products will become available from packers.

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Beef chunks has always been an under-utilized, difficult-to-market product, requiring skilled labor to make it more saleable. The first attempt to make the chuck more convenient to merchandise occurred in the early 1970's with the introduction of the 3-piece boneless beef arm chuck – three pieces consisting of the blade, clod and arm. In 1983, customer demand resulted in development of a 2-piece beef chuck; and in late 1985, a neck-off boneless chuck yielding lean boneless neck meat, boneless chuck short rib, ground chuck and neck bones.

Research has been completed on characterization of muscles from the chuck and this information must be integrated into our marketing system. Foodservice today uses minimal amounts of chuck because of the lack of uniformity.

Specific muscle selection makes it possible to design products with consistent tenderness, flavor and texture.

Examples of selected muscles available for processing:

1. Clod
2. Chuck tender
3. Chuck roll
4. Neck meat
5. Boneless chuck short rib
6. Pectoral
7. Beef lifter meat
8. Flap meat – inner surface of bottom sirloin
9. Ball tip – 2# up and 2# down
10. Tri tip – 3# to 4#

Ground beef patties continue to be the most popular food item. Upscale home-style burgers with loose texture and irregular shape continue to provide new opportunities.

Automated forming equipment which will handle whole muscle red meats is allowing restructuring of steaks and is bringing about new opportunities in all segments of the food industry.

Packaging improvements:

1. Reduced spoilage
2. Improved product appearance
3. Improved marketing efficiencies

Packaging improvements are due to more efficient removal of air by chamber vacuum and heat-sealing rather than metal clips. Vacuum levels of subprimal packages have been improved from 20 to 28 inches of vacuum. Shelf-life improvements of 7 to 14 days on subprimal beef cuts are currently being marketed. Shelf-life testing is dependent on temperature. In order to determine real shelf-life of a product, temperature variation must be used in the shelf-life testing. Simulated abuse testing with programmed temperature vari-

ation results in more practical results, while temperature with no abuse is generally impractical. Packaging materials continue to improve, with bone guards being laminated into barrier shrink bags – again improving package integrity.

Improved utilization of variety meats, tongues, hearts, oxtails, tripe and beef kidneys has been achieved by marketing these products "fresh." Vacuum packaging and storing at 28° to 30°F have resulted in extended shelf life. IBP markets 15 styles of tongues – fresh, skinned, and now the new precooked tongue.

New technology for mechanical reclaiming lean beef is nearing USDA approval. Partially defatted beef tissue has been upgraded to partially defatted chopped beef, due to improved heating and chilling techniques. By utilizing mechanical separation equipment, partially defatted chopped beef can be upgraded to beef trimmings. This can mean a significant improvement in making beef protein more competitive in a world market.

Beef tenderness continues to be a major issue in consumer acceptance of red meat. Electrical stimulation has provided improved tenderness, along with aging beef in vacuum bags. Aging subprimal beef in vacuum bags for more than seven days is impractical and improvement in tenderness and flavor is somewhat questionable. Perhaps mechanical tenderization is needed at the packer, processor and retailer levels to insure consistent tenderization.

Export markets continue to be a great resource for adding value to the carcass. Parts of the carcass that currently have value in foreign markets:

1. Hanging tenders
2. Outside skirts
3. Leg tendons
4. Heart
5. Brains
6. Tripe
7. Small & large intestine
8. Weasand meat

There are major changes occurring at all levels within the beef industry. Applying current and new technology to consumer needs is the challenge of the future.

Discussion

Session One

J. Leising: A major question concerning this whole area is "What will be the impact to the industry and to the total food chain by removing more fat from the carcass?" Jim Wise, would you give us your perspective on that question and some of the effects that it may have on yield grading?

J. Wise: There are a million ways you can go on this. One of the things Jerry and I were discussing is that we are basically looking at more of the ¼-inch trim programs or the closer trim programs in most of the beef retailing. There is going to be a lot of rethinking of the marketing process, I believe, and we are going to have to get away from the dressing percentage concept. If you want to put a lean product in the counter, then "high dress – high yield" is kind of out the window. Those are low-value products now and we are eventually going to see more pressure on producing and identifying the more valuable, higher-cutability carcasses; at that point, we may have to try to get more detailed criteria, a more refined yield grading system. Other things we have been hearing discussed is whether packers can do some additional trimming, and whether it has to be done hot versus cold. These are issues that are going to keep surfacing and there is going to be a need for help from the academic world, industry and government – we are all going to have to work together in this.

D. Parrett: We all understand the concepts for lean beef and the progress in moving that way. Every time I go to a beef meeting in the winter, the producers say "You university guys keep saying that and the packer-buyer keeps saying, feed them another 30 to 40 days." How much lag do you think there wil be for this lean concept in beef production? How long is it going to be, in your opinion, from an industry perspective, until this thing is really going to take hold and run?

Leising: I can comment on that. I do not have the answer. I wish I had a crystal ball that said, "It's going to be two weeks or a month." The large retailers of the country are really demanding it. I was in a meeting in Dallas. Maybe some of you were at the same meeting (the AMI-FMI meat marketing meeting). It was nice to see the retailers, I am talking about the Krogers, the Safeways of the country, standing up and demanding that the packer create a product that is leaner. They have had them in place for awhile. It is a matter of the packer responding to that, and they are in the process of doing that. Someone else here may have a comment as to the timetable on that. I do not think we have seen the total effect at all, at this point.

D. Buege: What trend do you see in terms of quality grade from the retailers and from other sources you supply? Are they still sticking with Choice to a large degree, or is there more movement towards ungraded cattle — Good and so on?

Leising: From what I have been exposed to, it is a very mixed bag. Each retailer has their specific program and profit objective, and some use Choice, some use no-roll or the Good grade. I think it is going to remain very mixed. Again, it is how you merchandise that particular product. I think there are some very good opportunities in the no-roll area to enhance that product. It may be non-traditional type retailing that offers those opportunities, though. Certainly there is some good research going on right now in the area of marination of no-roll type meat to improve the tenderness of that product. For example, the Ponderosa Steak Houses of the world, the Bonanzas, those types of steak houses are successfully using this type of program, and it is growing. I think what we are really discovering is that we can marinate a steak, we can needle-tenderize a steak and improve the quality of that product.

G. Davis: I just want to comment on your first question. I