

Nebraska Beef Council

...strengthening demand for beef

www.nebeef.org

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New Sampling Methods for E. coli Testing

Beef processors have implemented sophisticated food safety systems to minimize the risk of contaminated product entering commerce. One of the final steps in this system is called test-and-hold where beef trimmings are sampled and tested for *E. coli* O157:H7 and not released for sale until the test comes back negative.

The current gold standard sampling methods are N60 Excision and N60 Plus. Beef trimmings are commonly held in 2000lb combo bins. The N60 Excision method requires someone to use a knife to cut 60 pieces of the trim. N60 Plus method uses a drill to core down through the trim in the combo bin to shave off pieces of trim. The N60 methods of sampling beef trim for pathogen testing are effective, but they only sample a small percentage of the trim in the combo.

With support from the Beef Checkoff through the Nebraska Beef Council, the U.S. Meat Animal Research Center has developed two new beef trim sampling methods that provide a much more representative sample of the trim in a combo bin. The first approach uses continuous sampling of the trim as the combo is filled. A stainless-steel bracket attached at the end of the trim conveyor belt holds a two-piece plastic cassette that clamps a sampling cloth (8" x 24"). The sample is collected as the trim pieces rub against the cloth as the trim falls into the combo bin. The cloth is changed for each combo and is processed for pathogen analysis. The second approach uses the same sampling cloth but is used to manually sample the entire top of the combo bin after it has been filled with trim.

We have conducted a series of experiments with our industry partners comparing the continuous sampling device (CSD) and the manual sampling device (MSD) to the commonly used N60 methods. We have data from over 1400 samples collected on numerous days across multiple companies, processing plants, and fat percentages. The results of these experiments collectively demonstrate that sampling beef trim using the CSD or the MSD provide alternative sampling methods with the same or better results. They also have some implementation advantages in labor, cost, safety, and ease of use relative to currently used methods for sampling beef trim. Ultimately these new methods should result in improved beef safety.

The Food Safety Inspection Service has granted a new technology no-objection-letter allowing the new methods to be used in commercial practice. Several companies are conducting in-plant validation studies and at least one company has implemented the MSD method. Implementation of the new methods is anticipated to increase across the industry this year.

Research for this project was conducted by Dr. Tommy Wheeler and Dr. Terry Arthur from the U.S. Department of Agriculture, Agricultural Research Service at the U.S. Meat Animal Research Center in Clay Center, Nebraska.

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The Nebraska Beef Council is a non-profit organization served by a nine-member board of directors. The volunteers oversee Nebraska's beef checkoff and checkoff-funded programs. Programs for marketing and promotion are funded by the \$1 beef checkoff.