Pre- and Post-Harvest Interventions to Reduce Pathogen Contamination in the U.S. Beef Industry

T.L. Wheeler, N. Kalchayanand, J.M. Bosilevac

PII: S0309-1740(14)00194-6
DOI: doi: 10.1016/j.meatsci.2014.06.026
Reference: MESC 6470

To appear in: *Meat Science*

Received date: 13 April 2014
Revised date: 19 June 2014
Accepted date: 20 June 2014

Please cite this article as: Wheeler, T.L., Kalchayanand, N. & Bosilevac, J.M., Pre- and Post-Harvest Interventions to Reduce Pathogen Contamination in the U.S. Beef Industry, *Meat Science* (2014), doi: 10.1016/j.meatsci.2014.06.026

Pre- and Post-Harvest Interventions to Reduce Pathogen Contamination in the U.S. Beef Industry†

T. L. Wheeler*, N. Kalchayanand, and J. M. Bosilevac

**U.S. Department of Agriculture, Agricultural Research Service,
Roman L. Hruska U. S. Meat Animal Research Center,
Clay Center, Nebraska 68933-0166, USA**

ABSTRACT

Significant effort has been targeted at reducing the risk of pathogens in U.S. beef products since the mid-1990s. These efforts were focused on *E. coli* O157:H7 after it was declared an adulterant in ground beef or its components. Initial efforts that were primarily post-harvest interventions applied to hides and carcasses by the beef processing sector resulted in significant progress. Meanwhile six additional non-O157 Shiga toxin-producing *E. coli* (STEC) serogroups were made adulterants in some beef products in 2012 and studies to ensure existing interventions for *E. coli* O157:H7 were effective against the six non-O157 STEC were conducted. By the mid-2000s the general consensus was that much progress had been made at the processing plants and further significant improvement in reducing pathogen risk would require pre-harvest strategies to reduce pathogens before animals arrived at processing plants. However, effective pre-harvest approaches proved much harder to identify and implement. Currently, significant discussion regarding *Salmonella* as an adulterant is becoming more focused, thus, efforts to ensure availability of effective interventions against *Salmonella* are under way. Success to date has resulted from the combination of regulatory, research, and industry efforts to reduce the presence of pathogens in beef. This paper reviews interventions used to reduce the risk of pathogen contamination in beef products and some of the research and events that have influenced their implementation.

Key Words: E. coli, O157, Beef, Carcass, Interventions, Pre-harvest, Post-harvest, Salmonella

*Corresponding author. Tel.: +1-402-762-4221; fax: +1-402-762-4149. Email: tommy.wheeler@ars.usda.gov (T.L. Wheeler)

†Mention of trade names, proprietary products, or specified equipment does not constitute a guarantee or warranty by the U.S. Department of Agriculture and does not imply approval to the exclusion of other products that may be suitable. The USDA is an equal opportunity provider and employer.