



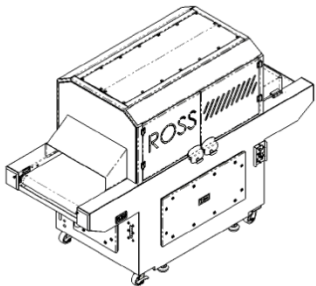
# OSU Intervention Study Topline Results



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# Oklahoma State University Validation Study

- In February we selected OSU as the lab to use for this comparative study of the included intervention products applied using our Integral Intervention application system – OSU's team is headed by Dr. Brad Morgan
- 9 intervention product companies elected to participate & fund this research which compares 12 anti-microbial concentrate formulations head to head under real processing world conditions & rates
- The test protocol was reviewed & accepted by the USDA Food Safety Inspection Services (FSIS) team
- Topline results get shared at June's RMC ; OSU's final findings/paper will be given at an AMI conference

## • The anti-microbial actives get grouped into 3 categories

◇ Outstanding Performance exceeds FSIS standard [ $\geq 1.26$  log reduction]

Δ HB2 (Bromine), Cytoguard Plus (LAE blended with PAA), Aftec (Sulfuric acid) & Citrilow (Dilute HCl)

◇ Standard Performance meets FSIS expectations [achieves a .92 to 1.25 log reduction]

Δ Perasan MP (PAA), XG-940 (ASC) & Cecure (Cetylpyridium chloride)

◇ Marginal Performance – below FSIS standard [ $< 0.92$  log reduction after 7 days]

Δ Preserv (Copper Sulfate), Beefside (Lactic Acid) & Syntrx (Dilute HCl)

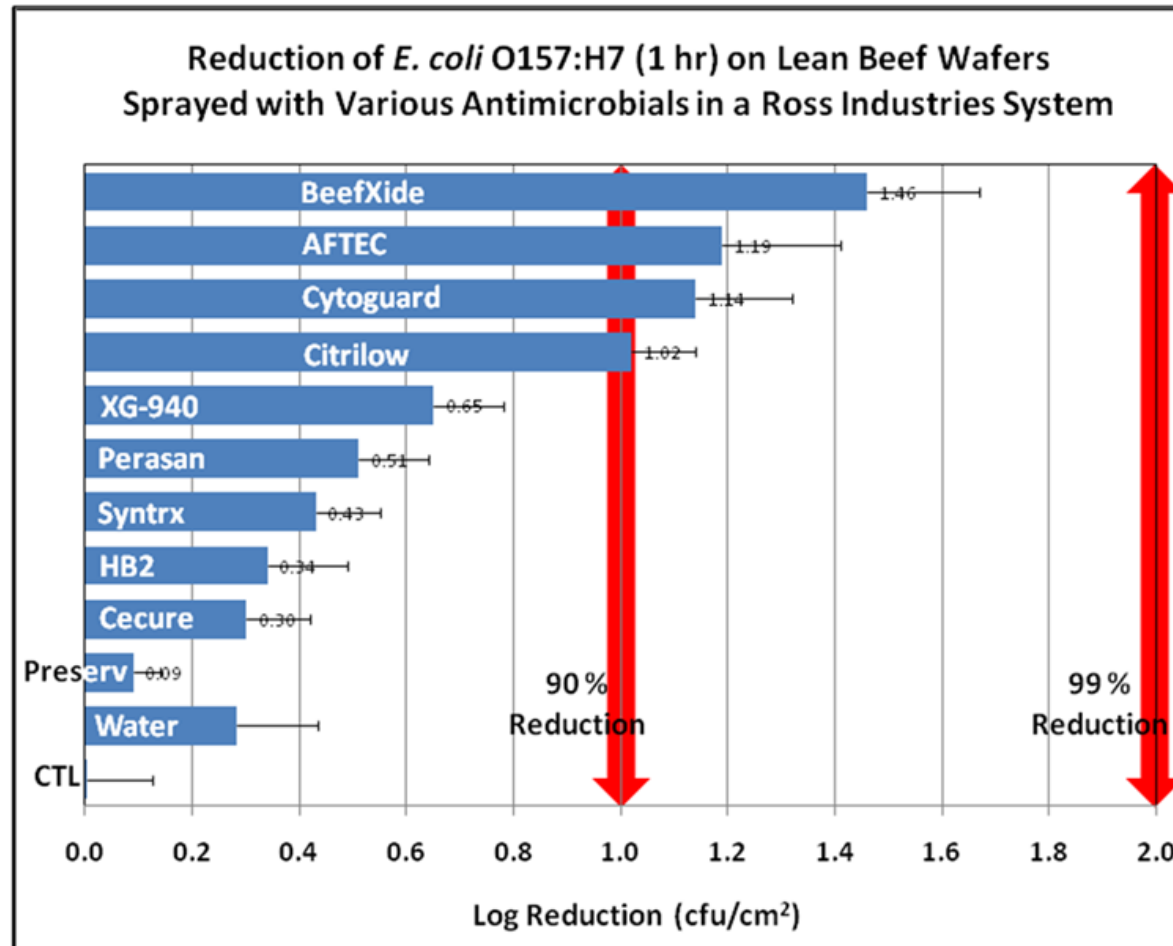
Shots from the OSU Test Laboratory for this study -



# Study Topline – Immediate Impact Results (1 hour after treatment) -

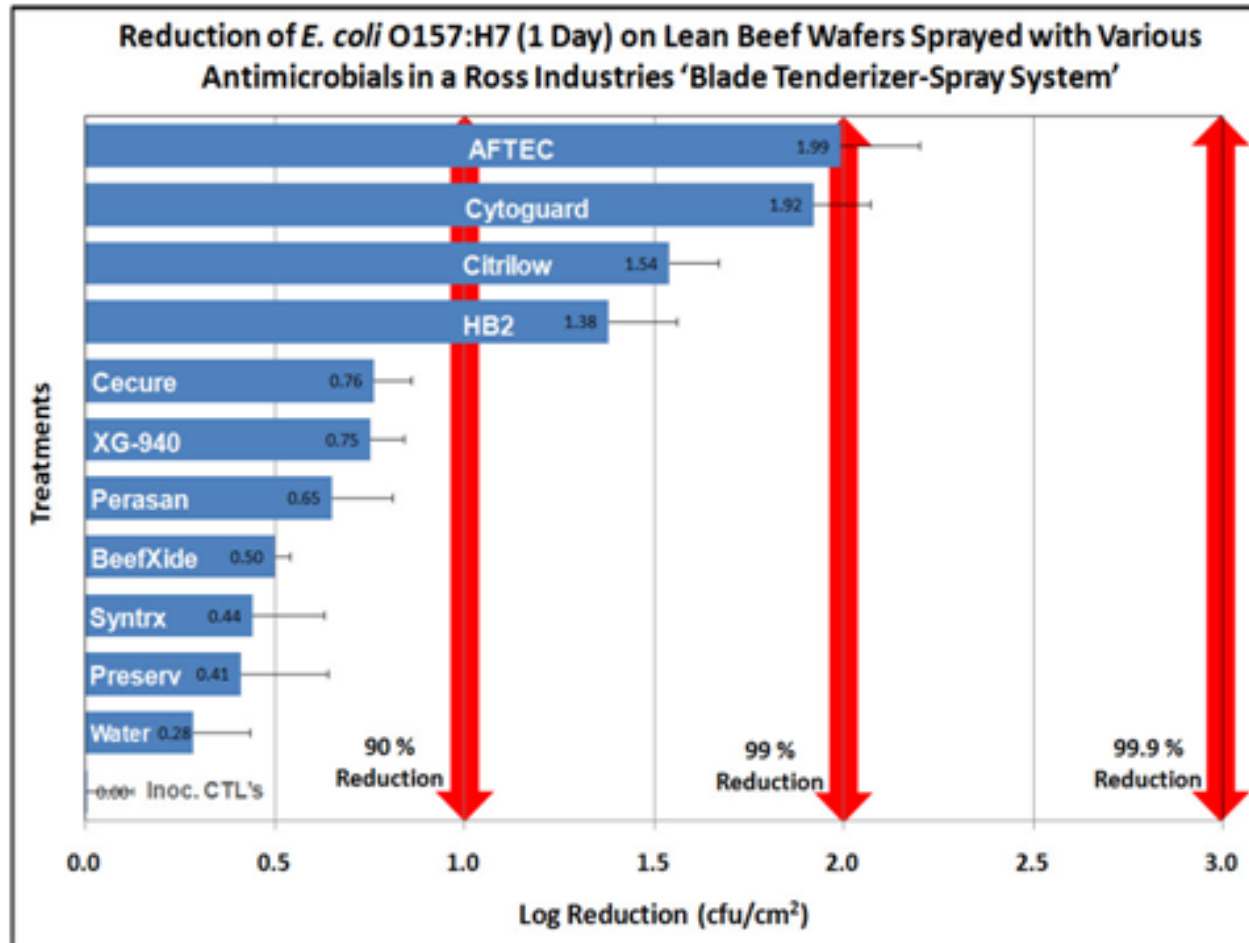
## Showing the Relative Effectiveness of the tested Products

- Lab conditions duplicated typical meat processing room environment including actual tenderizer, production rate & cool 40F application temperature



# TopLine OSU Microbiological Sample Results after 1 Day

- These are 24 hour results – the performance change for various solutions is obvious
- Cytoguard Plus is a blend of Perasan & LAE – the Lauric Arginate synergistic benefit is significant



# Topline Results – Impact on Colony Size after 7 Days

- Note the product effectiveness order has changed slightly from the 1 Day (24 hour) results

