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Scalding, Defeathering, and Rehang

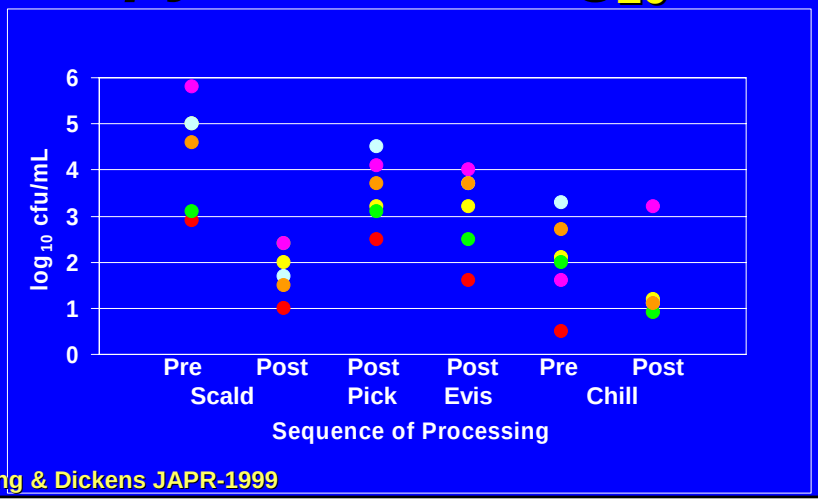
as Primary Sources for Redistributing *Salmonella* Typically with no Antimicrobial Intervention and the Featherless Broilers

Relative Levels (# CFU) and Incidence (%+) through Processing Steps

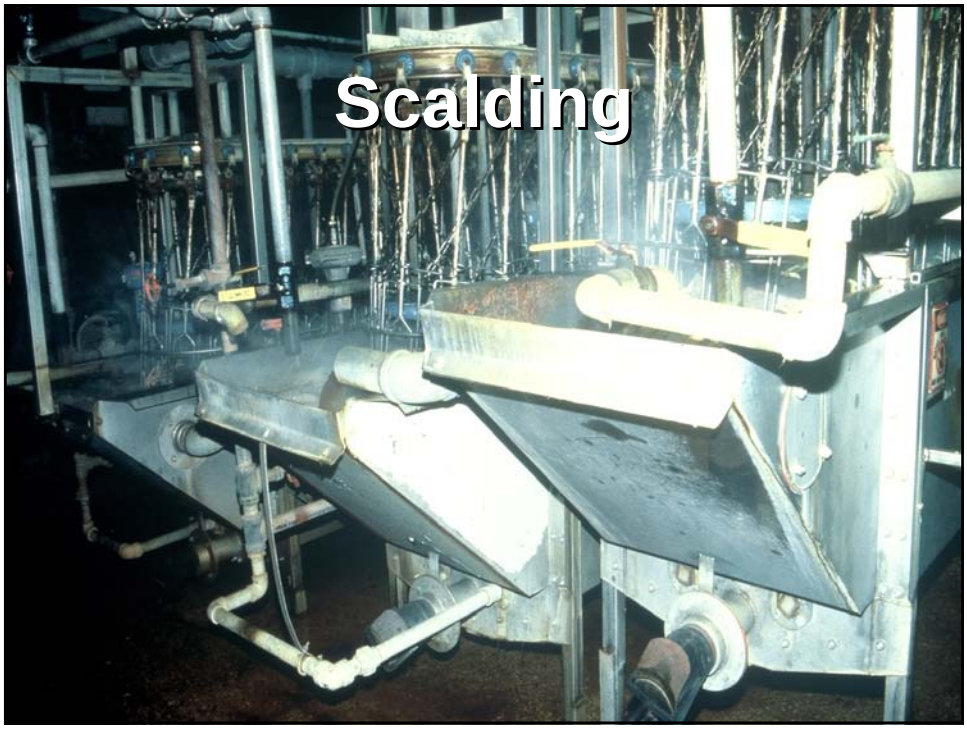
Salmonella & *Campylobacter*

Scalding	Dec #	/	% ?
Defeathering	Inc #	/	Inc %
Rehang	Neutral	/	Inc %

Flock differences in *Campylobacter* $\log_{10}$ CFU



Berrang & Dickens JAPR-1999



Scalding - Positive

Loosens / Removes

feces, litter, and bacteria

Loosens Feathers and the Epidermis

Scalding - Positive Physical Equipment

Multiple tank (temperatures)

Counter current flow

Triple pass - enter and exit opposite ends of each tank

Scalding - Negative

Common bath > potential for cross contamination

Immersion > potential for internal contamination

Seldom evaluated without picking

Pre Scald Accessories

Brushes - remove vent material

“Preventer” - empty the cloaca

Electrical Stimulation - induced defecation

All claim to reduce fecal material

Tank 1 Tank 2 Tank 3

Salmonella Recovery from Scald Water

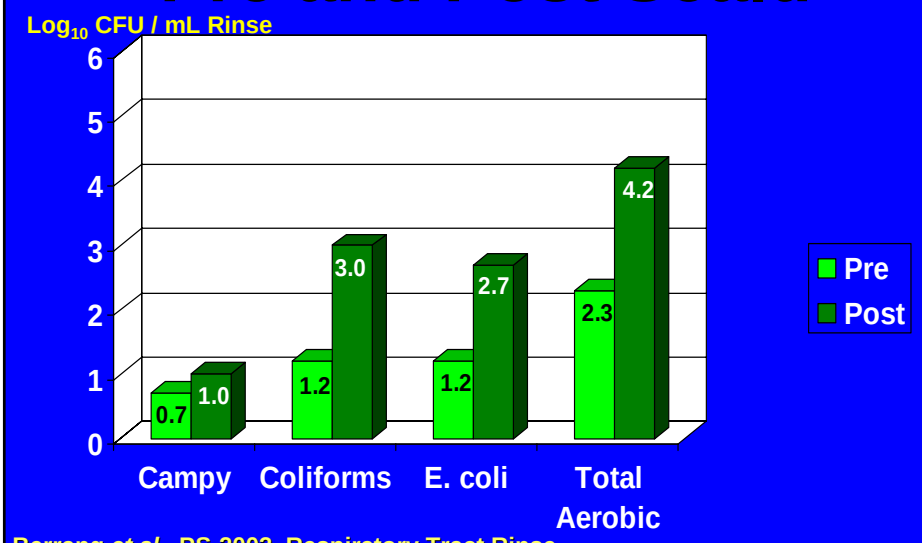
	Tank 1	Tank 2	Tank 3	Carcass
One Temp	7/8	7/8	2/8	36/48
Three Temps	5/6	3/6	2/6	18/36

Cason *et al*., PS-2000, Cason & Hinton 2006

Question?

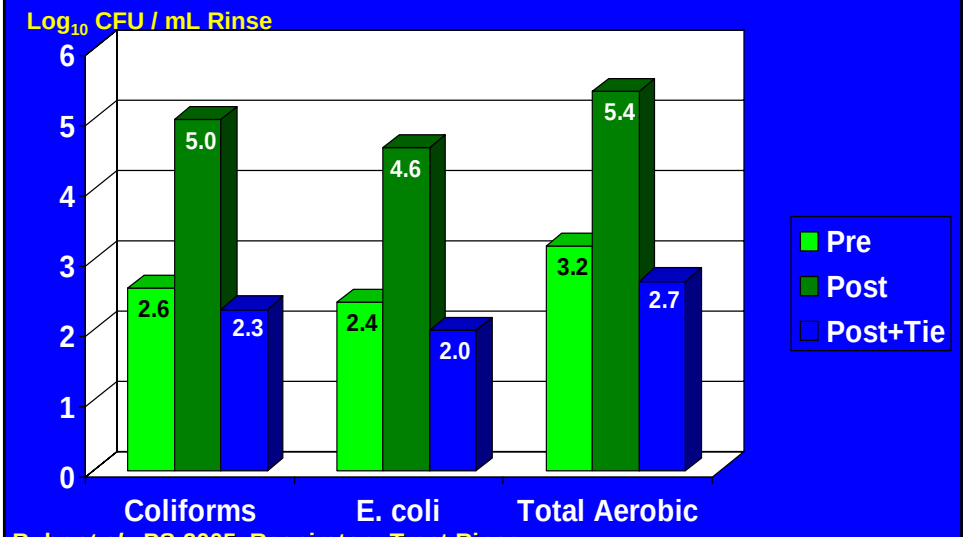
Do respiratory tract bacteria levels increase during commercial immersion scalding?

Respiratory Tract Pre and Post Scald



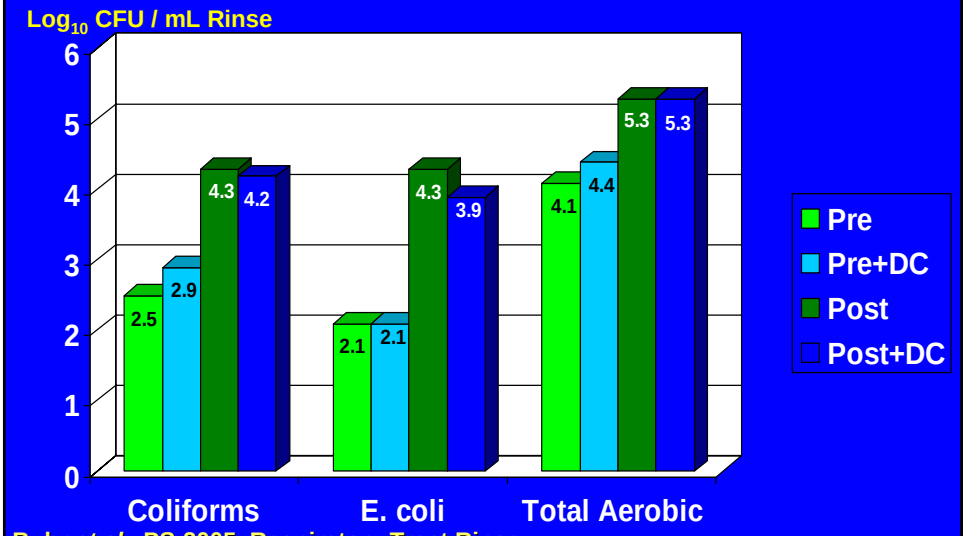
Berrang *et al*., PS-2003, Respiratory Tract Rinse

Respiratory Tract Pre and Post Scald



Buhr *et al.*, PS-2005, Respiratory Tract Rinse

Respiratory Tract Pre and Post Scald



Buhr *et al.*, PS-2005, Respiratory Tract Rinse

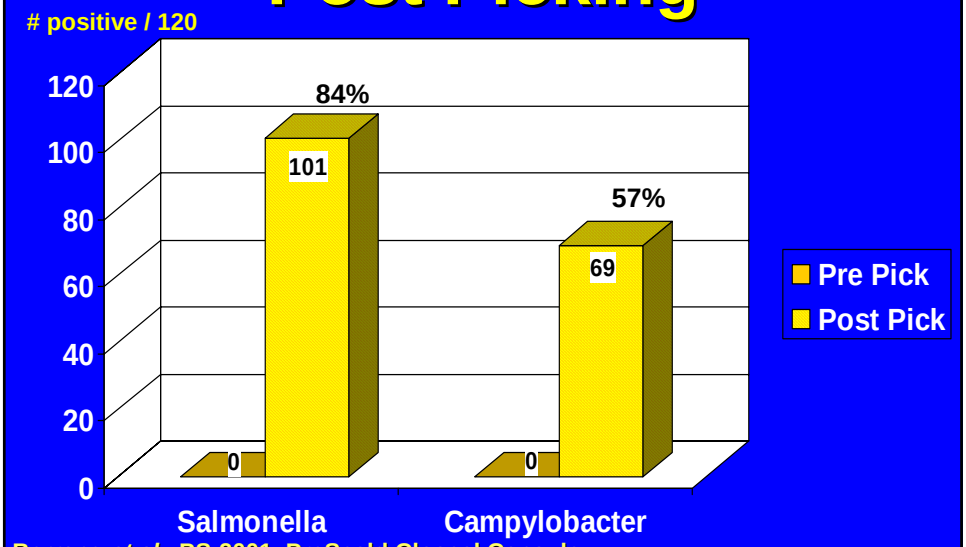
Defeathering - Positive

Removes Feathers, the Epidermis, and Bacteria on Feathers and the Epidermis

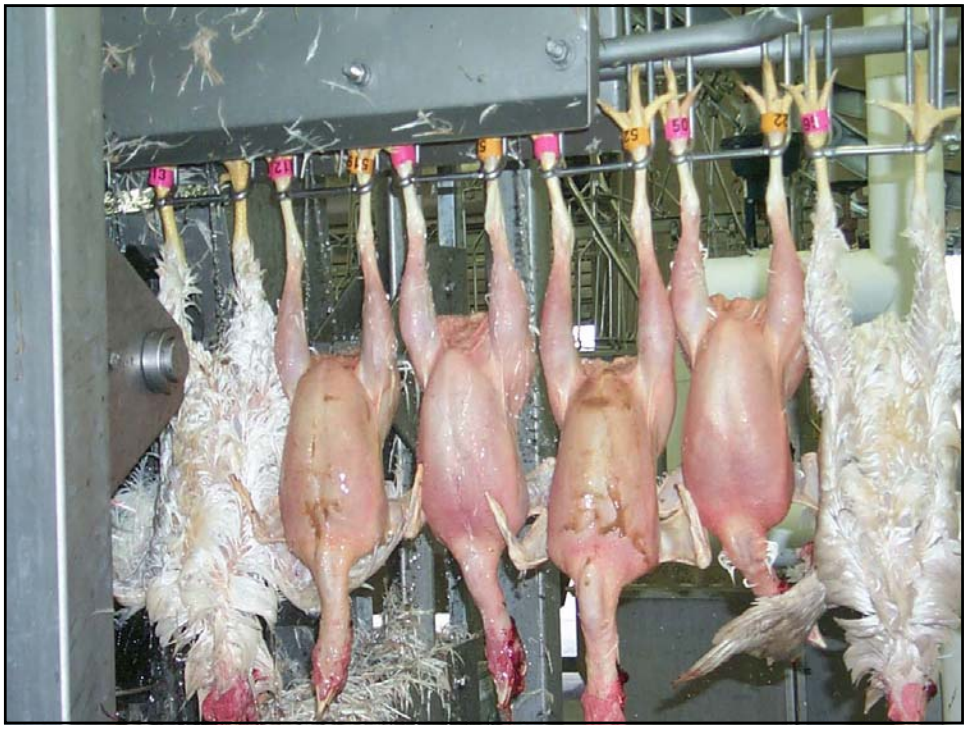
Defeathering - Negative

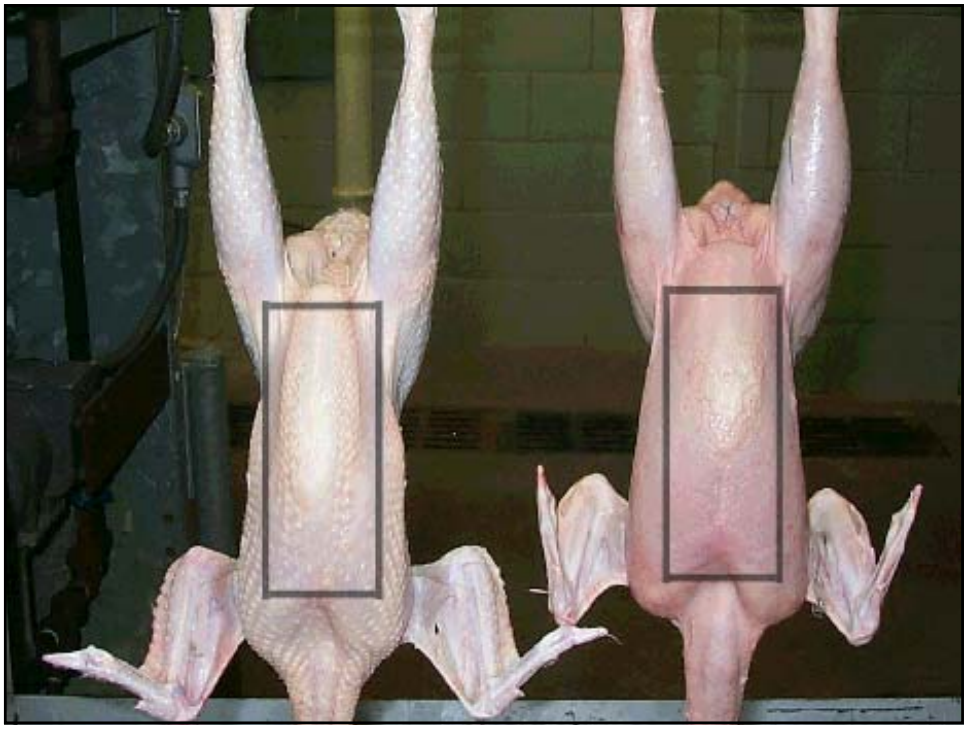
Expresses contents of cloaca onto carcasses during picking

Breast Swab Pre and Post Picking

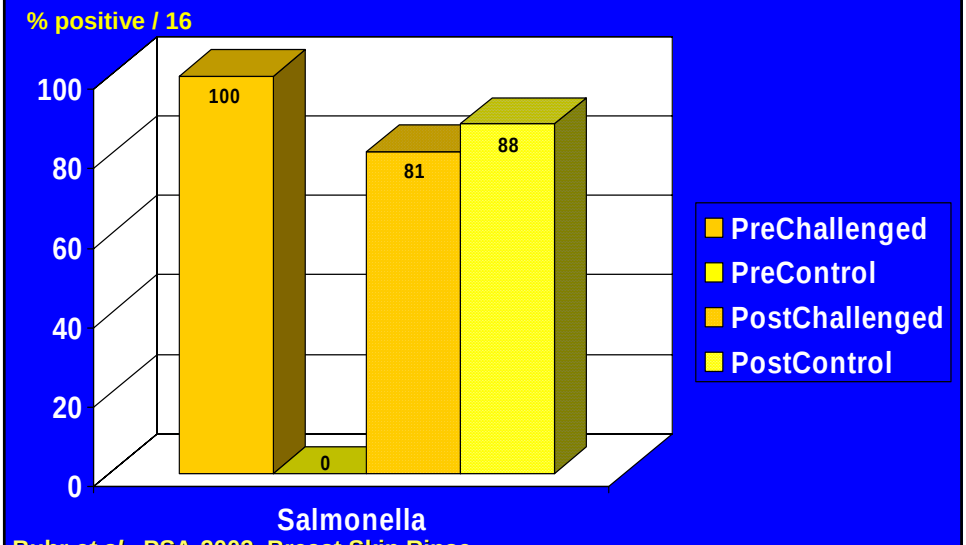


Berrang *et al.*, PS-2001, PreScald Cloacal Capsule

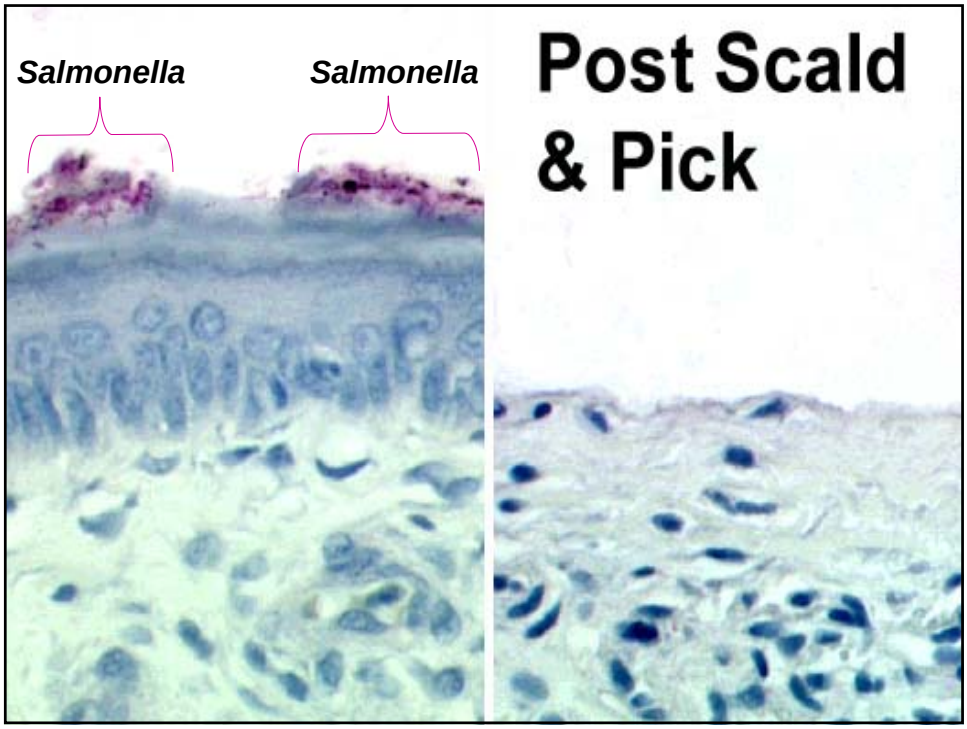




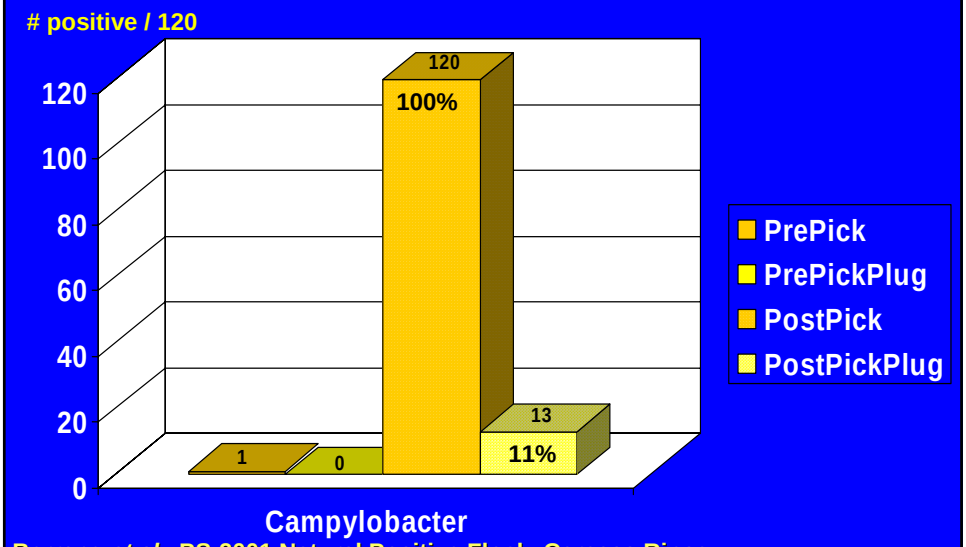
Pre and Post Pick Breast Skin



Buhr *et al*., PSA-2003, Breast Skin Rinse

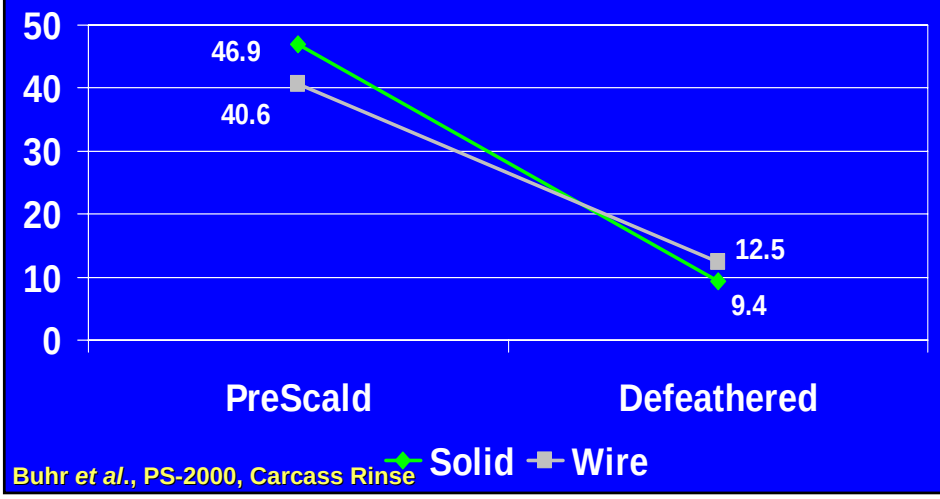

Salmonella
Salmonella
Post Scald
& Pick

Pre and Post Pick



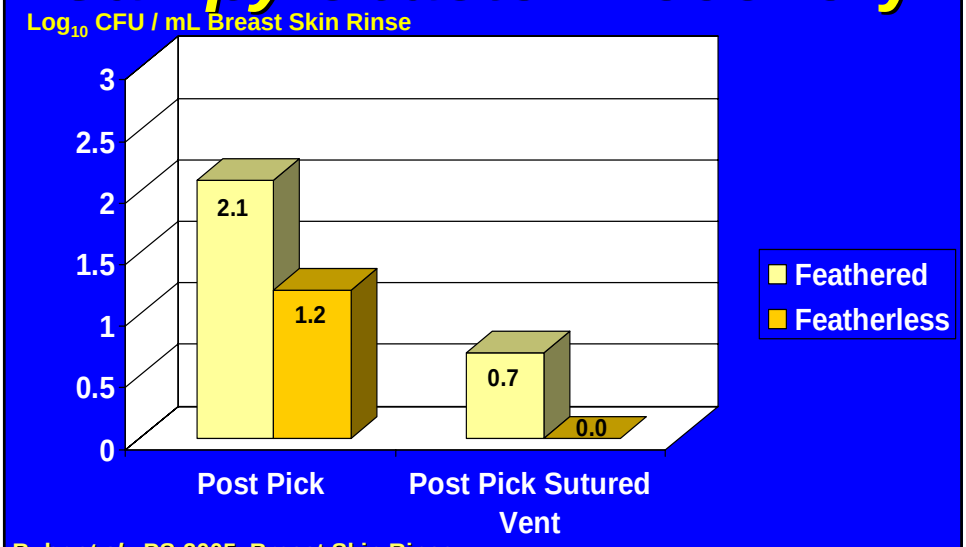
Berrang *et al.*, PS-2001 Natural Positive Flock, Carcass Rinse

Campylobacter %-positive

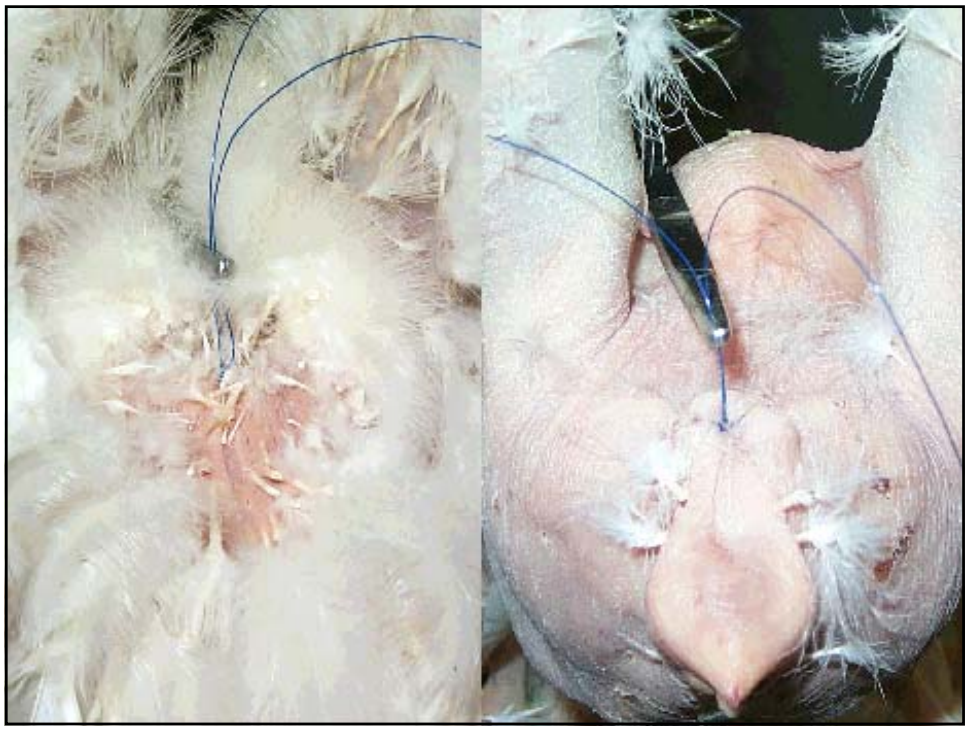


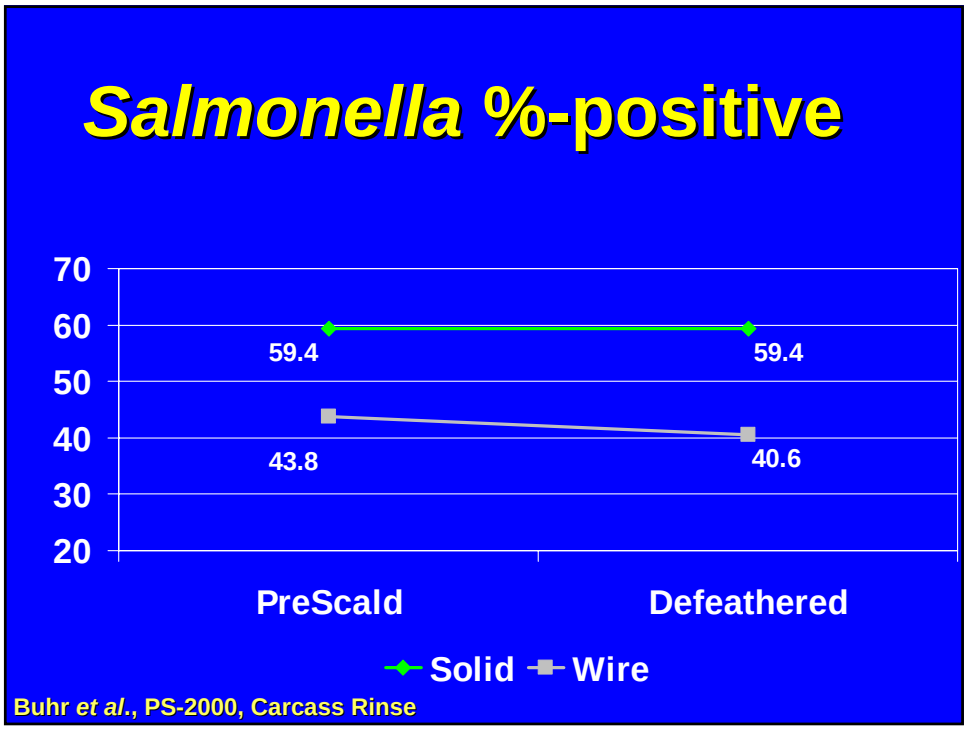
Buhr *et al.*, PS-2000, Carcass Rinse

Feathered vs. Featherless *Campylobacter* Recovery

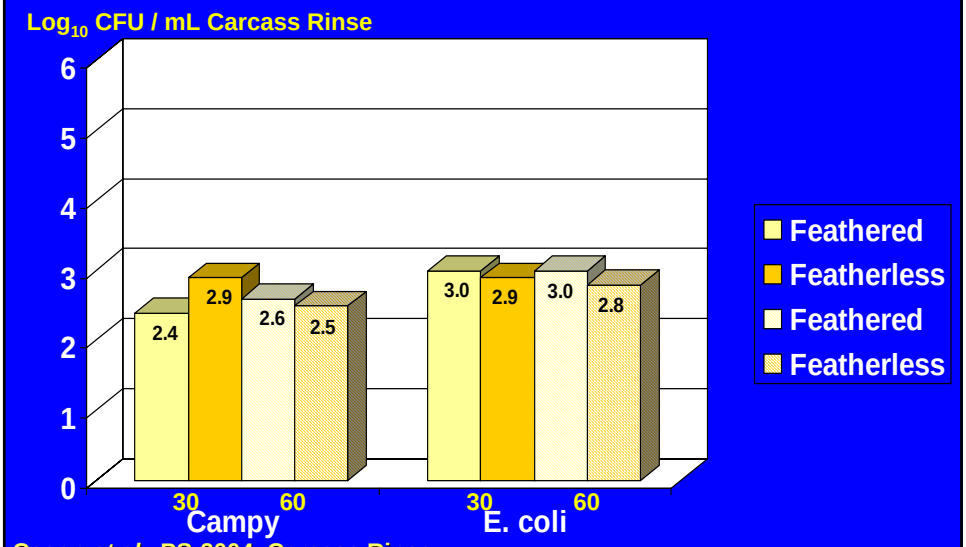


Buhr *et al.*, PS-2005, Breast Skin Rinse




Salmonella %-positive
70
60
50
40
30
20
59.4
59.4
43.8
40.6
PreScald
Defeathered
Solid
Wire
Buhr et al., PS-2000, Carcass Rinse

Picking for 30 or 60 sec



Cason *et al*., PS-2004, Carcass Rinse

Automated Rehang

Machine transfer between Defeathering line and Evisceration line, minimizes external surface cross contamination

Rehang - Positive

Separate Defeathering & Evisceration shackles lines

Remove Feet and Head

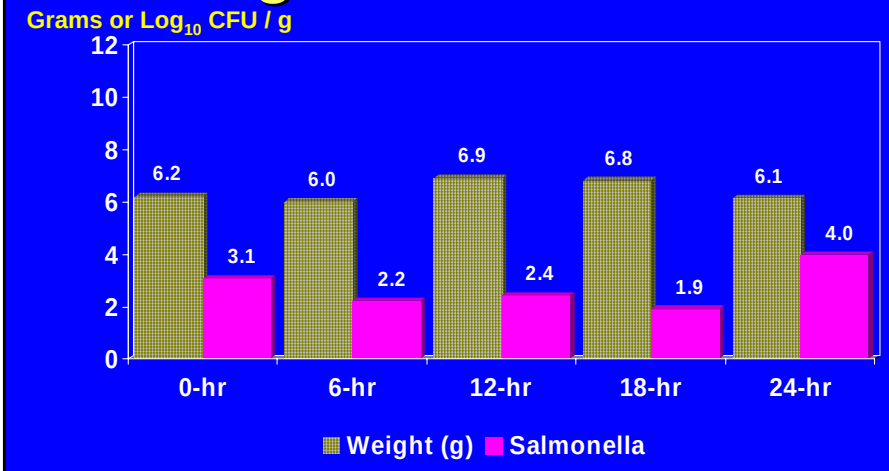
Rehang - Negative

Leakage from Vent or Esophagus - Crop

Time on Rehang table

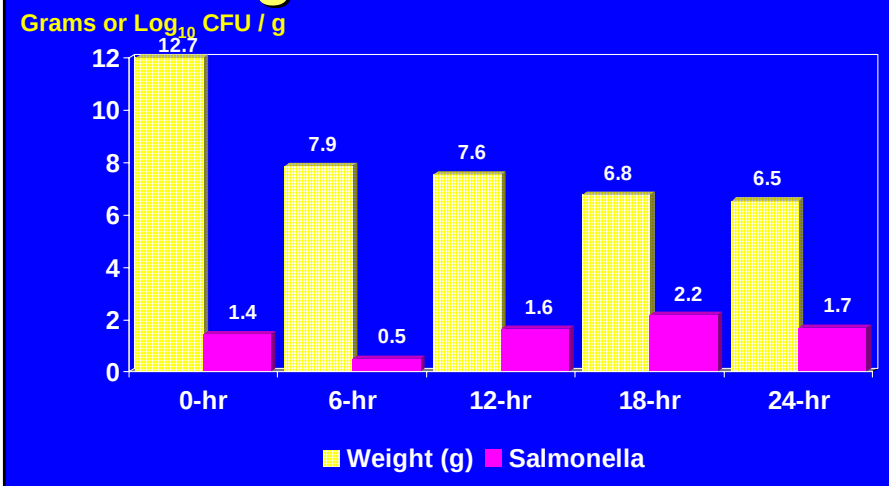
Slowed Evisceration line

Feed Withdrawal - Ceca Weight and *Salmonella*



Hinton *et al.*, PS-2000, Broilers

Feed Withdrawal - Crop Weight and *Salmonella*



Hinton *et al.*, PS-2000, Broilers

Featherless Broilers

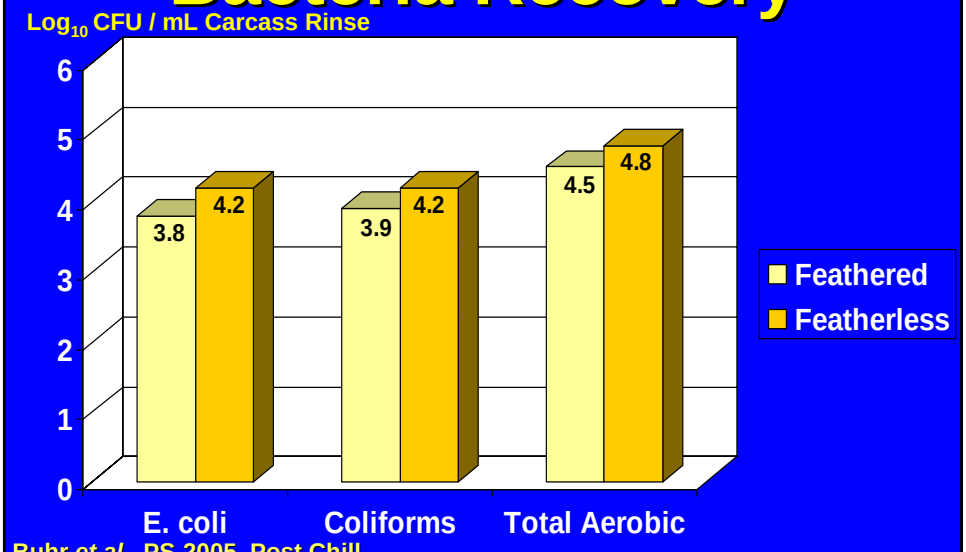
Autosomal recessive gene

Scaleless – feathers & scales

Outcrossed 3x Broiler Breeders

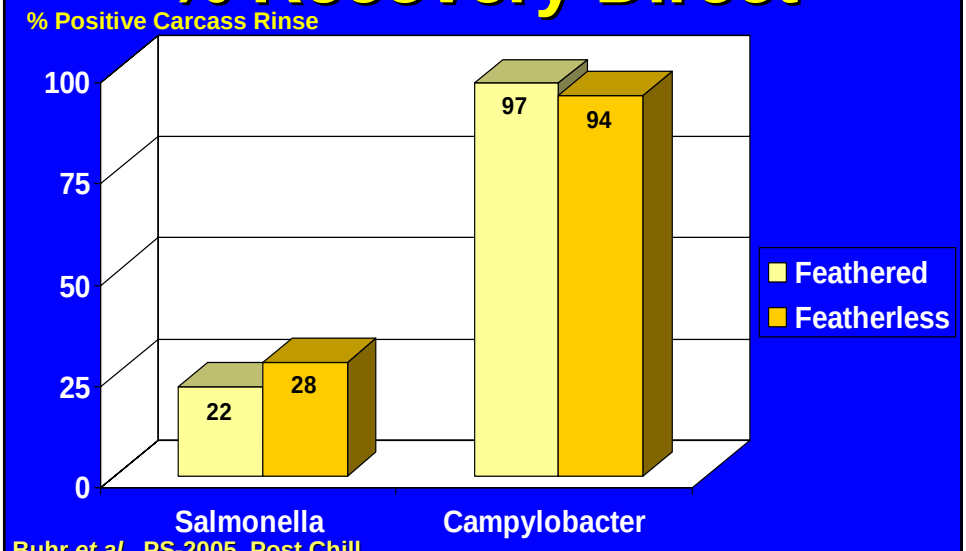
Description PS 2003, 82:1641

Feathered vs. Featherless Bacteria Recovery



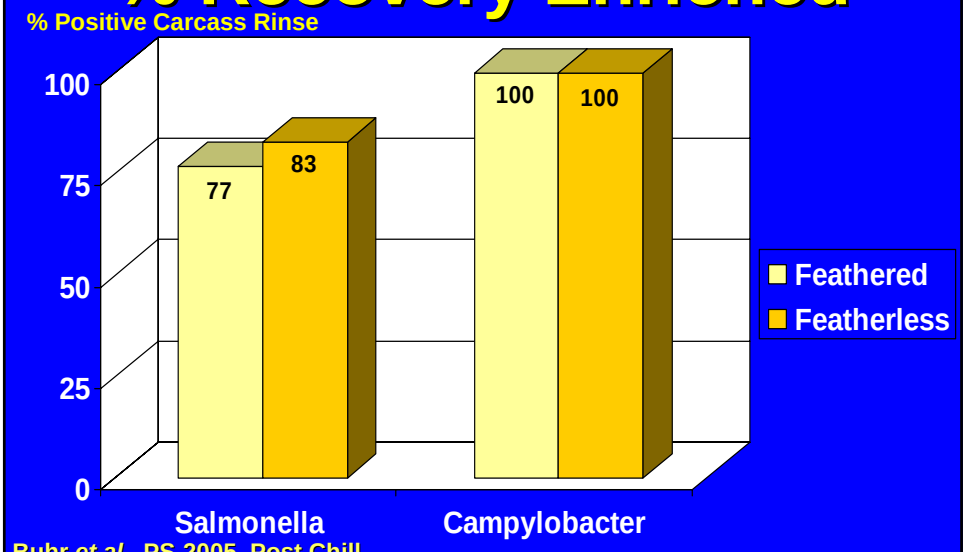
Buhr *et al.*, PS-2005, Post Chill

Feathered vs. Featherless % Recovery Direct



Buhr *et al.*, PS-2005, Post Chill

Feathered vs. Featherless % Recovery Enriched



Buhr *et al.*, PS-2005, Post Chill

Featherless Broilers

The absence of feathers and empty feather follicles does not result in lower carcass bacteria recovery levels Post Chill