On-Farm *Salmonella* Control Measures for Layers

Egg Handling Influences On *Salmonella* Spp. Contamination

Pfizer Animal Health
Global Poultry

Sources Of *Salmonella* Spp. Introduction To The Egg

- Infected hens
- Environmental contamination

Salmonella Spp. Infection Process

- Risk of *Salmonella* spp. transmission:
  - Infection of the hen's reproductive tract (*S. pullorum, S. gallinarum, S. enteritidis*) resulting in eggs laid already infected
  - Fecal contamination and penetration through pores in the eggshell

Salmonella Spp. Infection Process

- Environmental contamination is another source

Salmonella Spp. Infection Process

Salmonella spp. can be found in organic material such as chicken feces…

…or rodent droppings

Salmonella Spp. Infection Process

- Egg shell can be contaminated by organic material containing *Salmonella* spp.

Salmonella Spp. Infection Process

- Eggs have natural defenses to prevent *Salmonella* spp. from penetrating shell and contaminating egg
  - Cuticle
  - Shell
- But these defenses cannot overcome mishandling of eggs

Processing Offers First Opportunity for Control

- In the U.S. shell eggs must be washed and sanitized during processing to remove surface contamination
- USDA Grading Regulations
  - Cleaning on Page 35

Refrigeration Is A Key Point In *Salmonella* Control

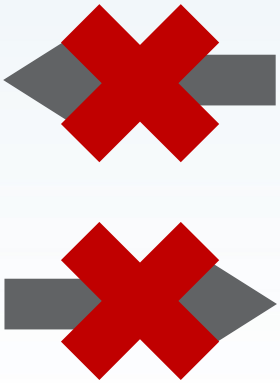
Warm vs. Cool

- Once refrigerated, eggs should remain refrigerated
- Eggs should only go from warm to cool, never back again
  Maximum storage temperature = 45º F (7º C)
  - USDA Grading Regulations – Cooling Room on Page 35

Warm vs. Cool

- Moisture condenses on surface of shell when cool eggs are moved into a warm environment

Warm vs. Cool



- Moisture travels through pores into egg white when eggs cool again
- *Salmonella* spp. on surface can travel along with moisture

Proper refrigeration and handling helps reduce risk of *Salmonella* spp. contamination and growth.