On-Farm *Salmonella* Control Measures for Layers

**Vaccination**
Why Vaccinate?

• To help reduce *Salmonella* infections in individual chickens
• To help reduce the number of positive flocks
• To help reduce the amount of *Salmonella* shed into the environment
• To help reduce contamination of eggs
  – Shell contamination
  – Vertical transmission
Why Vaccinate Layers Against *Salmonella enteritidis* (SE)?

- To reduce risk of human *S. enteritidis* (SE) outbreaks
- To help reduce risk of SE colonization of the hen’s internal organs, including the reproductive tract and intestines, hence becoming an integral part of an SE control program
- To protect brands and industry image
- To protect company and stock value
- To help reduce the risk of losses associated with diversion of eggs to breaking plants
- To help reduce potential of SE growth in eggs
  - SE bacterin use results in antibodies in yolk

\(^1\)
Modified-live *Salmonella typhimurium* (ST) Vaccines

- *Salmonella typhimurium* (ST) used for modified-live vaccines
- ST vaccines can help provide significant cross-protection against SE, *S. hader*, *S. heidelberg* and *S. kentucky*

- Mass Mass application – water or spray
- Early stimulation of immunity
- Minimal post-vaccination stress on birds
Target System Of *Salmonella* spp. Is Gastrointestinal (GI) Tract

Water and spray vaccination helps target GI route for optimum local immunity
Modified-live ST Vaccines – Spray Administration

• Coarse spray helps ensure vaccine reaches GI tract
• Spray particle size should be at least 150 microns
• Coarse-sized droplets
  – Less inhalation and more coverage on feathers
  – Slower evaporation allows more time for preening
• Lights on during and after vaccination encourages preening
• Exhaust fans off during vaccination, when possible
SE Bacterins

• Bacterins contain inactivated (killed) bacteria
• SE Bacterins contain various phage types
• Phage types vary in pathogenicity
SE Bacterins

• Stimulate production of circulating SE antibodies
• More effective in turning positive environment negative\(^3\)
SE Bacterins

- Bacterins are water-in-oil mixtures (antigen:adjuvant)
- Adjuvant stimulates strong immune response
- Strong response may slow pullet rate-of-gain and delay onset of lay
SE Bacterins

• Prewarm bacterin to ~85° F (29° C) prior to injection to minimize vaccine reactions
• Not all bacterins are equally reactive
• While most are given under skin, some are mild enough to be injected into muscle
SE Bacterins: Antibody Response

- Bacterins stimulate an antibody response
- Circulating antibodies can be measured in laboratory
Vaccination should be an integral part of a *Salmonella* control program to provide you with confidence and added value.
References

