

Salmonella types from environmental samples from poultry breeder flocks in Ontario between 1998 and 2008

What is this research about?

Salmonella is the second most commonly identified bacterial cause of foodborne illness in humans in North America. In Ontario, many of the total reported cases of salmonellosis are thought to be associated with the consumption of chicken and eggs. Yet there have been very few studies in Canada on the temporal (time-related) occurrence of *Salmonella* in poultry breeder flocks. This study looked at the occurrence of *Salmonella* types in Ontario poultry breeder flocks between 1998 and 2008. The breeder flocks included were broiler (for meat production), layer (for egg production), and turkey.

What you need to know:

Prevention steps at the breeder flock-level would likely reduce the spread of *Salmonella* from breeder flocks to hatcheries and potentially also to the retail level.

What did the researchers do?

Michele Guerin, a Professor with the University of Guelph's Ontario Veterinary College, used surveillance data from the Ontario Hatchery and Supply Flock Policy, a government monitoring program to detect certain bacteria in Ontario poultry breeder flocks, to determine *Salmonella* occurrence, including the major types found, trends, and seasonal patterns. The data from over 74,000 samples submitted through the monitoring program between 1998 and 2008 underwent various statistical analyses.

How can you use this research?

Industry can use this research to understand the need to identify and implement on-farm control measures to help reduce the occurrence and spread of *Salmonella* in breeder flocks.

Government can use this research to understand the need to further develop monitoring programs and provide guidance to reduce the risk of *Salmonella* in the poultry production chain.

What did the researchers find?

Michele Guerin found the overall occurrence of *Salmonella* to be 47.4% in broiler-breeder, 25.7% in layer-breeder, and 19.6% in turkey breeder flocks. *Salmonella* Heidelberg was the most common type isolated from all three breeder flocks. Overall occurrence decreased over the time period. Seasonal effects were observed but varied from year to year. The four most common types of *Salmonella* found were:

- Heidelberg, Kentucky, Hadar, and Typhimurium in broiler-breeders
- Heidelberg, Brandenburg, Thompson, and Typhimurium in layer-breeders
- Heidelberg, Saintpaul, Brandenburg, and Muenster in turkey-breeders

The results of this study have allowed researchers to compare occurrences of *Salmonella* in breeder flocks with occurrences in hatcheries. For some of the common types, *Salmonella* was found in environmental samples of the breeder flocks around the same time that *Salmonella* was also found in hatchery fluff samples from the same population. This shows that the most likely source of *Salmonella* to the hatcheries was the breeder flocks.

The results of this research support the further development of monitoring programs and indicate that interventions at the breeder flock level might help reduce the occurrence of *Salmonella* to lower levels of the poultry production chain.

Keywords:

Salmonella Heidelberg, temporal clusters, prevalence, trend

About the University of Guelph researcher:

Dr. Michele Guerin, is an Assistant Professor with Population Medicine, Ontario Veterinary College at the University of Guelph. Email:

mguerin@uoguelph.ca

Dr. Theva Sivaramalingam was a graduate student on Dr. Guerin's research team.

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