







## Investigation of risk factors for the introduction of highly pathogenic avian influenza H5N1 virus onto table egg farms in the United States, 2022: A case-control study

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### Abstract

**Introduction:** The 2022–2023 highly pathogenic avian influenza (HPAI) H5N1 outbreak in the United States (U.S.) is the most geographically extensive and costly animal health event in U.S. history. In 2022 alone, over 57 million commercial and backyard poultry in 47 U.S. states were affected. Over 75% of the affected poultry were part of the commercial table egg production sector. **Methods:** We conducted a case-control study to identify potential risk factors for the introduction of the HPAI virus onto commercial table egg operations. Univariate and multivariable analyses were conducted to compare farm characteristics, management, and biosecurity factors on case and control farms. **Results:** Factors associated with increased risk of infection included being in an existing control zone, sightings of wild waterfowl, mowing or bush hogging vegetation less than 4 times a month, having an off-site method of daily mortality disposal (off-site composting or burial, rendering, or landfill), and wild bird access to feed/feed ingredients at least some of the time. Protective factors included a high level of vehicle washing for trucks and trailers entering the farm (a composite variable that included having a permanent wash station), having designated personnel assigned to specific barns, having a farm entrance gate, and requiring a change of clothing for workers entering poultry barns. **Discussion:** Study results improve our understanding of risk factors for HPAI infection and control measures for preventing HPAI on commercial U.S. table egg farms.

**Keywords:** HPAI, Risk factors, Biosecurity, U.S.A, Table eggs farms

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