SVEPM, MARCH 2024, UPPSALA, SWEDEN

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Protecting poultry from HPAI: biosecurity practices in Sweden

Sweden has experienced 23 outbreaks of Highly Pathogenic Avian Influenza (HPAI) in poultry since 2020. Indirect contact with wild birds was the most common route of introduction. The aim was to investigate how biosecurity is implemented on commercial poultry farms in Sweden to identify weak points and best practices to prevent virus introduction.

Conclusion
The results indicate a variation in implementation of biosecurity on commercial poultry farms in Sweden, with production type specific challenges. The findings will be used to inform the poultry industry and to further strengthen biosecurity to **protect poultry from pathogens.**

Figure 1: Different level of hygiene at feed silo: a. very clean, b. presence of feed spillage and bird droppings.

> *We can't do anything more than we are doing with manageable costs.*

> *The virus is airborne and comes through the ventilation.*

> *We try to not take hay from areas with bird droppings.*

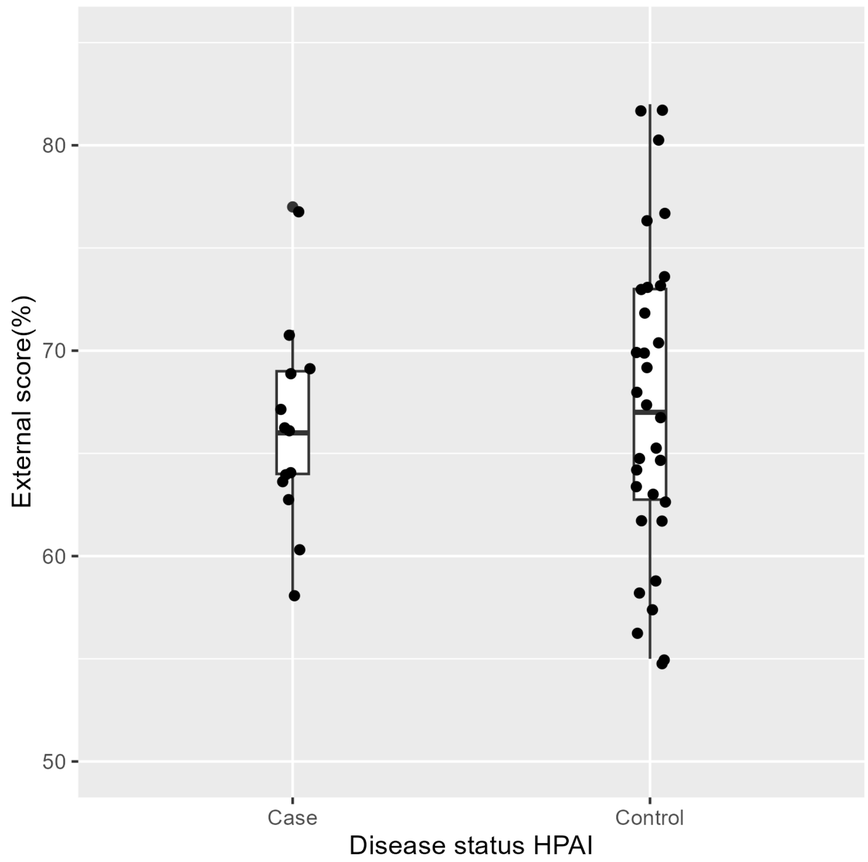

Figure 2: External biosecurity score (Biocheck.UGent) for HPAI cases and controls.

Table 1: Identified weak points in biosecurity

Characteristic	***N* = 48**[1]
No farm specific biosecurity plan	44 (92%)
All staff not trained in biosecurity	41 (85%)
No designated clean and dirty areas of the farm	42 (87%)
Suboptimal anteroom layout for biosecurity	30 (54%)
No strict separation of clean/dirty area of house hygiene lock	11 (23%)
Suboptimal hand hygiene routines	34 (71%)
No cleaning and disinfection of equipment before entry	29 (60%)
Hay or straw provided to poultry*	22 (46%)

[1]*n* (%)

*The provision of hay or straw is not a weak biosecurity point in itself, but several hygienic challenges were noted during storage and transportation.

Result

- Weak points of importance for HPAI risk present (Table 1)
- Marked variation in the observed level of biosecurity
- Different perceptions of "clean" (Fig. 1)
- No difference in the external biosecurity score (Fig. 2)
- Significant differences between production types in implementation of specific biosecurity measures

Methods

- Farm visits with face-to-face interviews and observations
- 15 farms with HPAI-outbreaks during 2020/2021, and 33 matched controls
- Questionnaire developed by the research group focusing on the wild bird to poultry interface and Biocheck.UGent (https://biocheckgent.com) with focus on general biosecurity
- Broilers, layers, pullets, parent breeders and turkeys
- Qualitative, open ended, dichotomous, and multiple-choice questions
- Data analysed using ANOVA or Fisher's exact test for numerical and categorical variables respectively
- Comparisons between case/control, production type, region and farm size

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Funded by the Swedish research council FORMAS (grant number 2021-02293)

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