



# Good enough? Assessment of poultry biosecurity following HPAI outbreaks

Sweden has experienced 25 outbreaks of Highly Pathogenic Avian Influenza (HPAI) in poultry since 2020, with direct costs of 470 million SEK. Indirect contact with wild birds was the most common route of introduction.

We investigated how biosecurity is implemented on commercial poultry farms and barriers to best practice using a mixed quantitative and qualitative approach.

## Conclusion

The results indicate a variation in biosecurity on commercial poultry farms in Sweden, with production-type specific challenges. There are multiple conflicts of interest, and often a sense of powerlessness in preventing HPAI. Specific knowledge on effective prevention measures are called for.



”  
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 1: Different level of hygiene at feed silo: a. Very clean, b. Presence of feed spillage and bird droppings.

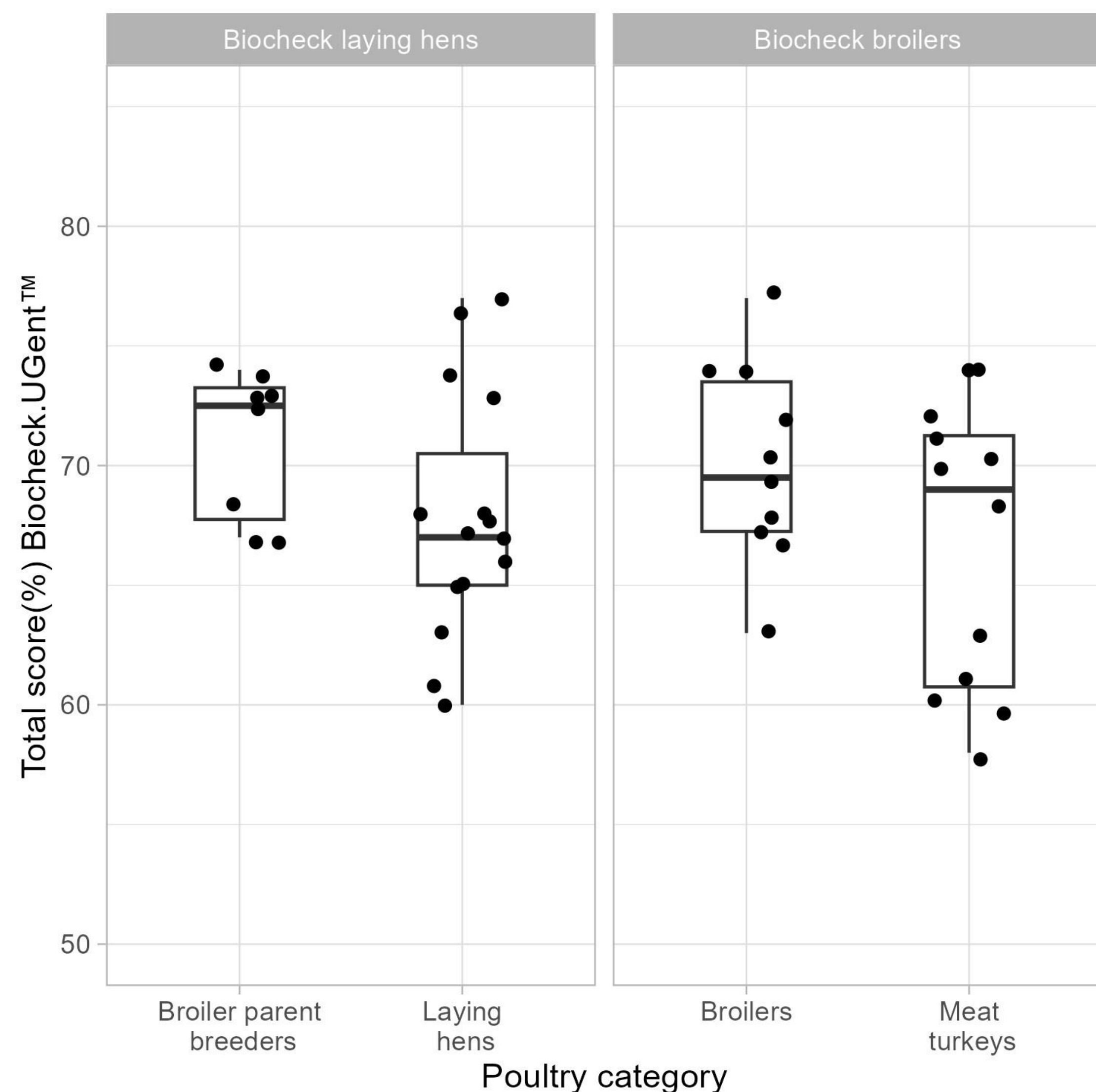


Figure 2: Total biosecurity score (Biocheck.UGent) by poultry category.

## Results

- » Weak points of importance for HPAI risk present
- » Marked variation in the observed level of biosecurity
- » Different perceptions of “clean” (Fig. 1)
- » No specific biosecurity measure identified as protective
- » Significant differences between production types in implementation of specific biosecurity measures
- » Multiple barriers to best practice identified through thematic analysis

## 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
- » 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
- » Thematic analysis of qualitative data

## Biosecurity themes identified from qualitative data

- Knowledge** - demand for evidence-based advice and increased knowledge among farmworkers
- Infrastructure** - common barrier to good biosecurity
- Conflicts of interest** - balance economy, animal welfare and environmental concerns
- Non-compliance with own routines** - rules are occasionally bent
- Powerlessness** - for example to control wild birds, rodents and professional visitors
- Proportionality and risk-based approach** -pointless to address low-risk introduction routes when high-risk routes remain
- Heterogeneity** - Different approaches with different strengths and challenges

