

A multi-approach sampling strategy to assess exposure to microbiologic agents in poultries

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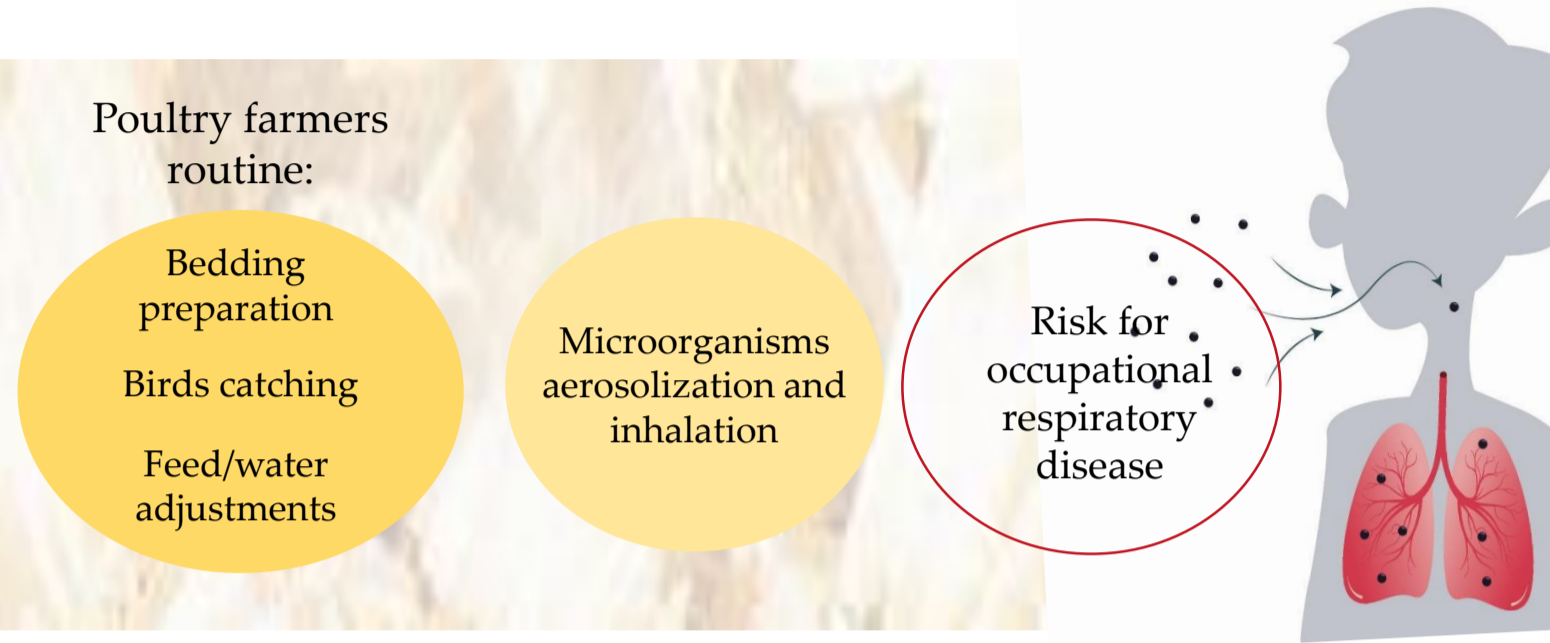
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Introduction

A reasonable number of studies focusing on **microbiological contamination** associated with the **poultry industry** evidence **various health concerns** [1,2]

In occupational studies focusing on microbiological contamination in poultry farms, **air sampling is typically the only sampling method used** [3]

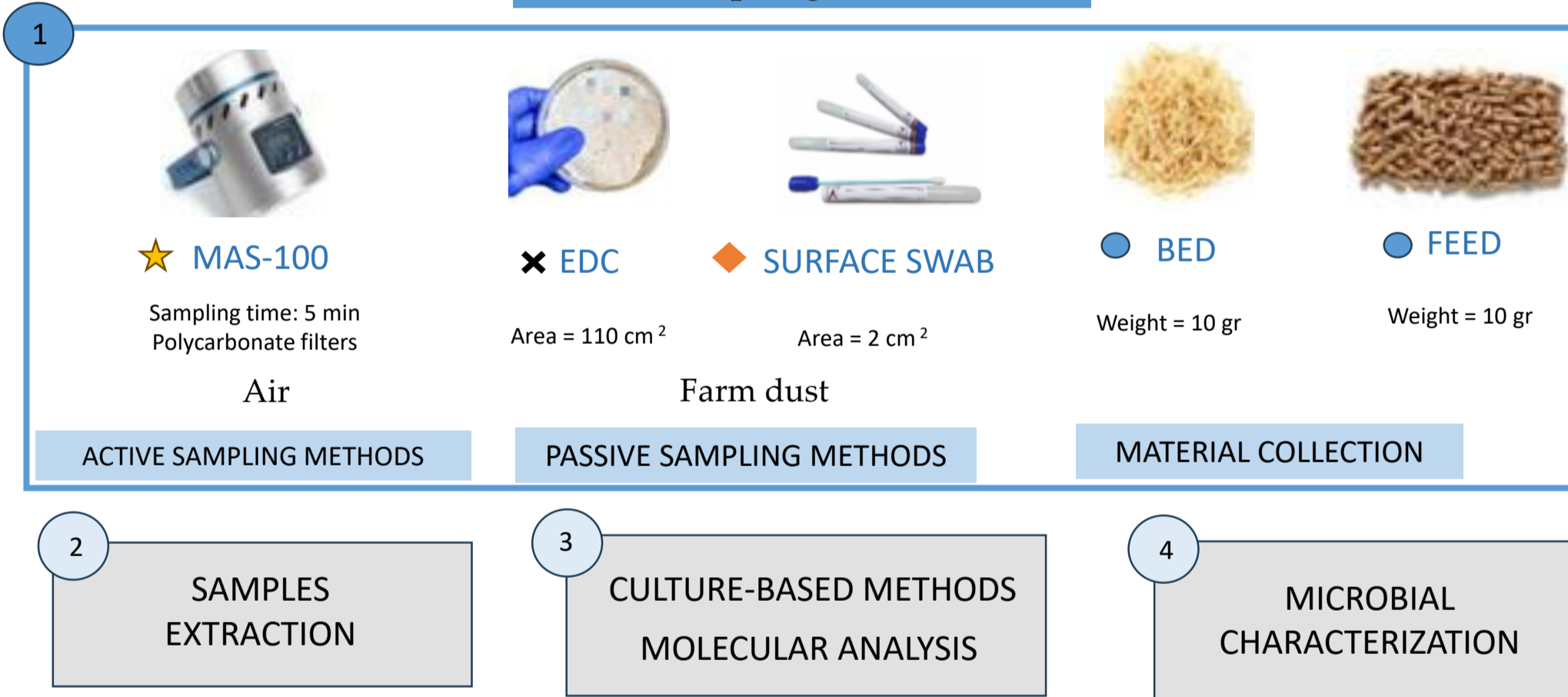


To better understand the relationship between factors influencing microbial contamination and adverse health effects, **data regarding the amount, composition, and risk category of the common microorganisms are needed** [4].

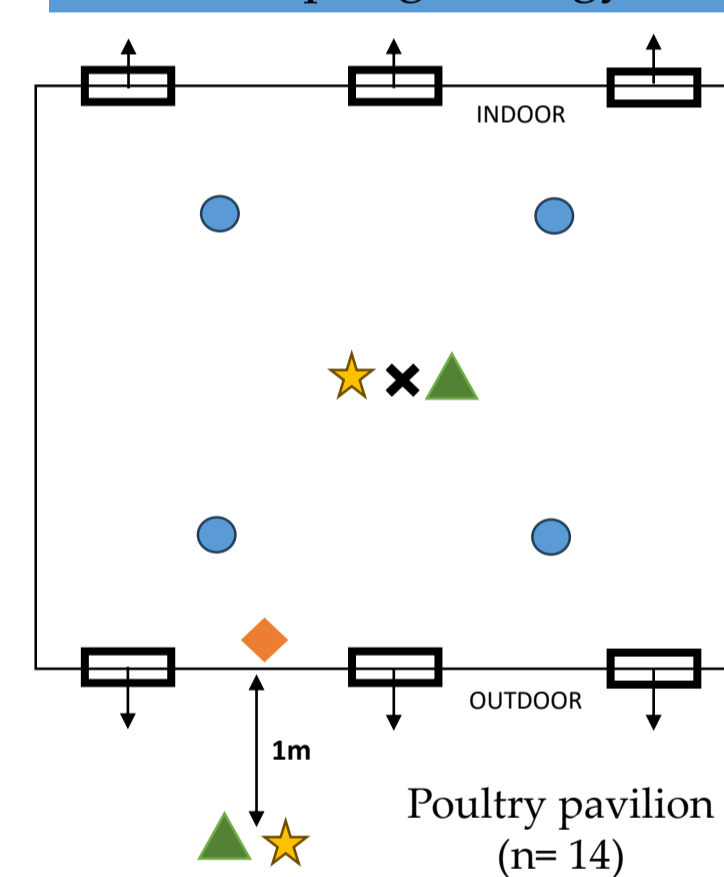
This study intends to apply a multi-approach sampling protocol and corroborate the importance of its application for a wider microbial characterization

Methodology

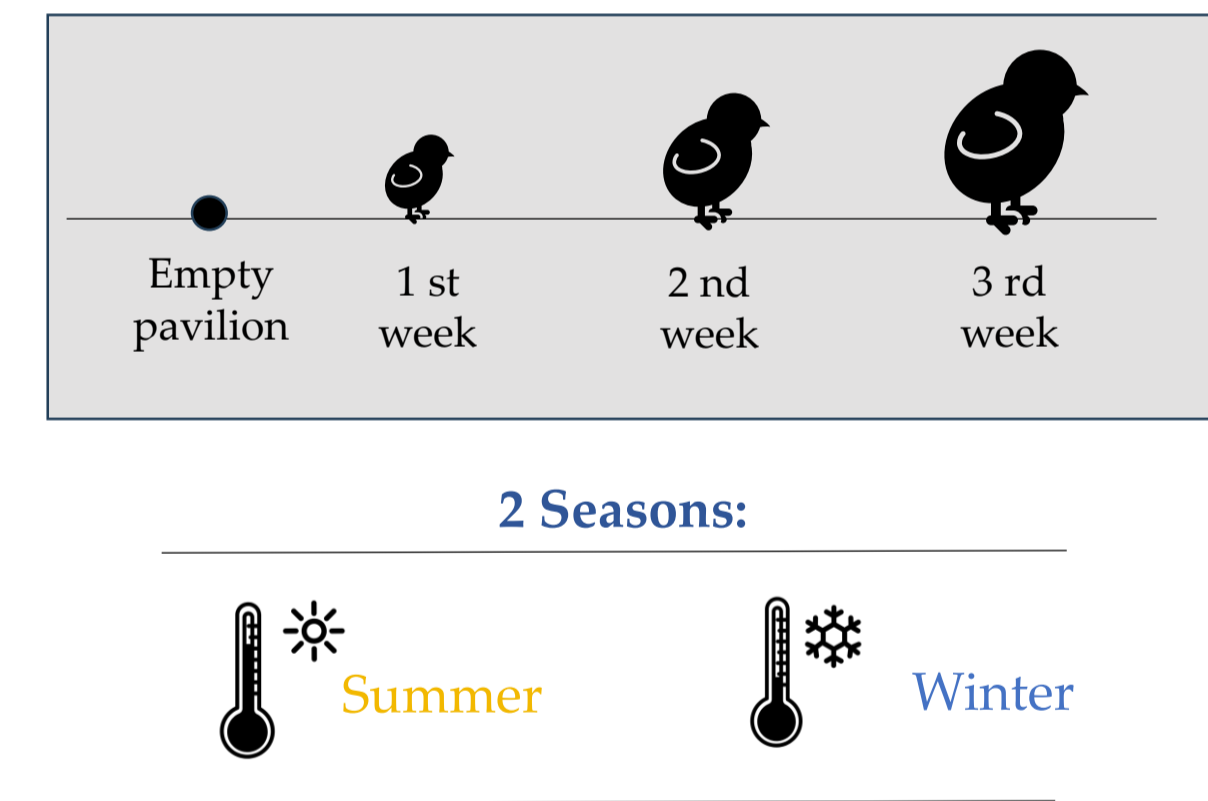
1. Sampling methods



2. Sampling strategy



3. Sampling Frequency



Results and discussion

Culture based-methods: Fungal prevalence in indoor air samples was highest during: the 3rd week (35%), followed by 2nd week (33%) and 1st week (10%).

Molecular analysis: Fungal detection in indoor air samples was highest during: the 3rd week (69%), followed by 2nd week (64%) and 1st week (43%).

Culture based-methods offer the advantage of enabling **identification and quantification of viable microorganisms** which is **essential to estimate health risks** since microorganisms' **viability** can restrain **microorganisms' pathogenic potential**. Culture-based methods, on the other hand, may underestimate the results since incubation temperature and culture conditions may favor specific species [3].

PCRbased techniques have been widely used in detection of microorganisms from environmental samples to determine **accurately and quantitatively, the composition of microbial communities** [3]. These methods allow the **detection of non-viable microorganisms** which, may justify the differences between in the obtained results from conventional and molecular methods.

Conclusions

- Both **methods have advantages and limitations** when applied to characterize occupational exposure to biological agents in different settings. The results highlight the importance of using a **multi-approach sampling strategy and laboratory assays** including culture-based methods along with molecular tools [3].
- The multi-approach sampling strategy and assays will **enhance data findings, enabling a more accurate intervention** in order to **propose strategies to improve poultry environment, enhance workers and animal safety while reducing environmental impact**.

References

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