I prefer:

X ORAL presentation

□POSTER presentation

**Hybrid Turkey Barn: The switch from a natural ventilated to a forced ventilated barn in risky situations**

Björn Sake1, Nicole Kemper1, Jochen Schulz1\*

\*lead presenter

1Jochen.Schulz@tiho-hannover.de, Institute for Animal Hygiene, Animal Welfare and Farm Animal Behavior, University of Veterinary Medicine Hannover, Foundation, 30173 Hannover, Germany

**Abstract:**

**Background/Objective:** In times of world wide spreading diseases such as the avian influenza appropriate biosecurity measures are necessary to prevent poultry flocks from infections. Although it is hypothesized that the potential entry into poultry barns via air plays a minor role, this kind of transmission is not controllable in natural ventilated poultry barns. Hence, a technical solution was developed which enables the switch from a natural ventilated turkey barn into a forced ventilated barn with filtered outer air. The objective of the present study was to assess the filter efficiency and the impact of the switch on the barn climate.

**Methods:** The investigations were conducted on a conventional turkey barn during the course of four consecutive fattening periods. Air samples (particles, bioaerosols) and climate parameters were taken and measured, respectively, at fortnightly intervals.

**Results:** The filter modules decreased both, PM10 and PM1 particles, in supplied air to more than 95%. Detection rates of indicator bioaerosols by PCR revealed no detection of avian metapneumovirus, 13 positive findings of *Ornithobacterium rhinotracheale* in front of filters and one behind a filter and three positive Influenza A samples in front of filters.

Results from climate measurements indicated a uniformly distribution of supplied air in the barn. All measured parameters (arithmetic averages) were below national minimal requirements (CO2 = 1,336 ppm; NH3 = 6.9 ppm) or in the range of recommended values (lux = 147; air velocity = 0.17 m/s).

**Conclusion:** Filtration of supplied air in poultry barns is suitable to filter particle fractions, which are known as main carriers for airborne pathogens. Negative effects on birds health by switching from a natural ventilated to a forced ventilated system can be avoided by controlling the air exchange rates and the air distribution.

**Keywords:** poultry, turkey barn, bioaerosols, filtration, barn climate