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How innovative barn design and novel decontamination methods in high-welfare pig and poultry barns can contribute to pandemic preparedness

Inhalt

Due to increasing global interconnection, the steadily rising number of livestock and the increase in zoonotic diseases (e.g. avian influenza), it is becoming increasingly important to improve biosecurity and to align it with the One Health approach. Improving animal welfare, particularly through open housing systems, leads to healthier animals with lower susceptibility to diseases, but also increases the risk of interactions with wildlife and environmental reservoirs, which facilitates the transmission of pathogens. Within the framework of the Leibniz Lab Pandemic Preparedness, we studied innovative approaches for pig and poultry housing design and management to minimize pathogen spread, e.g. outdoor areas that minimise the contact with wildlife by 'internal' position or the temporary installation of nets and roofings. The use of digital monitoring systems for efficient pest control (rodents, insects), new technologies for wildlife deterrence, and the use of antimicrobial surfaces (nanomaterials or bio-inspired structures) can be important steps towards increasing biosecurity. Novel physical and biological decontamination measures, such as far-UVC and the use of cold plasma are promising approaches. This study provides a crucial framework for the integration of innovative biosecurity solutions for open housing concepts in order to address the specific risks of these systems and significantly increase the resilience of livestock farming against future pandemics.

Keywords

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Professional Status of the Speaker

Senior Scientist

Junior Scientist Status

No, I am not a Junior Scientist.

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