Efficacy of Biosecurity Measures Related to Boot Hygiene for On Farm Veterinary Care

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Effective biosecurity measures are critical for preventing the spread of infectious diseases in agricultural settings, particularly in on-farm veterinary care where the potential for disease transmission is high. This research investigates the efficacy of biosecurity protocols focusing on boot hygiene in mitigating the spread of pathogens. A multiple-methods approach combining quantitative analysis of pathogen presence on boots before and after various hygiene interventions in relation to boot tread patterns was utilized. Dry treatments of egg lime and chlorine were compared to water controls and two common liquid sanitizers incorporating alkyl dimethylbenzyl ammonium chloride as an active ingredient. Boots used on outdoor surfaces were evaluated for microbial content, cleaned, and swabbed to determine efficacy of treatments assessed by ImageJ. In vitro evaluation of antimicrobial action via disc diffusion was used to gauge inhibition of Serratia marcescens and Escherichia coli K12 at inoculation and following incubation. Boot impressions were taken with ink to determine transfer from various boot tread patterns. It was hypothesized that dry chlorine powder would impact microbial loads to the greatest extent based on concentration and the common use of bleach for sanitation. Dry chlorine did not perform with the same success found in literature reviews. Liquid cleaners provided the best protection with significant differences in bacterial inhibition/reduction. Results indicate factors such as adherence to protocols, frequency of boot hygiene, boot tread, and choice of disinfectants may significantly influence the efficacy of biosecurity measures.

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