

## SWINE HEALTH

**Title:** Gilt acclimation strategies for *Mycoplasma hyopneumoniae* control: Evaluation of exposure protocols - NPB #18-116

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### Scientific Abstract (one page):

*Mycoplasma hyopneumoniae* (MHP) causes a chronic respiratory infection that significantly affects animal well-being, lowers feed conversion and predisposes pigs to co-infections. Intentional exposure to MHP during acclimation is intended to provide sufficient time for gilts to develop protective immunity and decrease MHP shedding before entering the breeding herd. The goal of this study was to compare the efficacy of intratracheal, intranasal and aerosol MHP inoculation protocols of live lung homogenate, in terms of clinical signs, MHP shedding, antibody response, and lung lesions. Six-week-old MHP- and PRRSV-negative gilts (n = 78) were randomized to one of four MHP exposure groups [aerosol (n = 24); intranasal (n = 24); intratracheal (n = 24); or no exposure (n = 6)] and followed through 49 days post exposure (DPE). The MHP inoculum consisted of lung homogenate (105 CFU/mL MHP strain 232). All routes of exposure resulted in infection of gilts. Intratracheal demonstrated earlier detection (7 DPE), and seroconversion (14 DPE); intranasal and aerosol showed similar time to DNA and antibody detection (14 DPE and 21 DPE). PCR Ct values were similar in MHP-exposed groups over DPE (p>0.05), but lower ELISA S/Ps were observed in intranasal and aerosol exposures compared to intratracheal exposure. Aerosol exposed pigs experienced the least impact on daily gain (0.64kg/day), performing similarly to the negative control group (0.73kg/day). At 49 DPE, gross and histopathologic lesions were observed in the lungs of 17/22, 19/24 and 19/24 gilts from the intratracheal, intranasal, and aerosol groups, respectively. While the intratracheal exposure route, frequently carried out in research and certain pig production settings, is highly effective in generating MHP infection, the intranasal and aerosol routes resulted in similar performance. These alternative routes offer less animal handling, they are less labor-intensive and invasive intratracheal inoculation. Practical and efficacious gilt exposure methods will improve MHP control programs.

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