

Additional insights from collaborators:

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There are four basic principles of a herd closure and elimination program for *Mycoplasma hyopneumoniae*. All stakeholders need to plan ahead to consider the needs, expectations and risks of the program so all can confidently move forward with a plan.

1. Load and close the farm.
 - a. Timeline:
 - i. Herd closure: The timeline is a crucial consideration to aim to meet production parameters and plan gilt breeding and culling activities on the farm. Thus, planning for adequate gilt supply in the herd is important for all members of the team to understand. It is best to plan for a 9-month gilt supply at minimum to cover the (1) Exposure to Day 1 time frame (around 1 month) followed by the 240-day minimum herd closure.
 - ii. Gilt breed project at the end of the herd closure: Persistence of *M. hyopneumoniae* has often been observed beyond the 240-day herd closure so we strongly push for consideration of a gilt breed project (*M. hyopneumoniae* negative gilts) at the end of the herd closure to improve the overall success of the *M. hyopneumoniae* elimination and maintain production targets.
 - b. Gilt availability and supply: One scenario to consider is whether the sow herd internally multiplies or whether they buy replacement gilts from the outside. The availability and supply of gilts is a strong consideration for the time of the herd closure as well as the restocking of negative gilts upon completion of the herd closure.
 - i. Gilts are often available in multiple ages or weights to ensure an adequate pool of gilts to breed on throughout the herd closure
 - ii. When planning a herd closure, the team also needs to deliberate on the projected gilt replacement rate with considerations of expected gilt death loss or culls in the youngest exposed lot of gilts which is your breeding pool at the end of the herd closure.
 - c. Facilities: Once you have known gilt supply needs, you need to consider how to house and flow those gilts through your facilities.
 - i. Do you have adequate on-site facilities to house these gilts the entire time or do you need to acquire an off-site GDU.
 - ii. If you need an off-site GDU, are you going to use this space for:
 1. exposure and growing of these gilts and then transport them to the sow farm during the herd closure
 2. breed project of *M. hyopneumoniae* negative gilts at the end of the herd closure and transport them to the sow farm once herd closure and elimination has been confirmed
 3. both of the above
 - iii. Are your facilities filtered or non-filtered?
2. Expose the entire population including replacement gilts to *M. hyopneumoniae* and test to establish adequate exposure (determine day 0).
 - a. From a labor standpoint, aerosol inoculation has been readily adopted in commercial production to expose populations of sows and gilts to *M. hyopneumoniae* in a short time period. These exposures have proven to be effective and allow early detection and medication of these gilts once colonized to minimize gilt death loss and maintain gilt quality.

- b. Test for Day 0 (to determine the start of the 240-day herd closure). Parameters have been published to show adequate colonization based on diagnostic sampling and population sizes. The most common diagnostic method used today for Day 0 testing is deep tracheal secretion sampling of the youngest gilts exposed. Once adequate colonization has been demonstrated, the clock starts on the 240-day herd closure timeline.
3. Whole herd vaccination with a *M. hyopneumoniae* bacterin. The goal of this is to improve overall herd immunity status. The timing and number of these whole herd vaccinations vary across published documents.
4. Herd medication: Many protocols for herd medications are available and vary widely. One big consideration is which animals to medicate, the cost of the herd medication, what risk the owner is willing to take, and how it can be effectively delivered to the animals that you are choosing to medicate (feed vs. water vs. injectable medications). The team needs to understand the bottlenecks (do you have medicators for gestation barn to give meds orally, do you have labor available, are you aiming to keep piglets negative, etc) so the herd closure plan can properly be executed.