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Preventing Foothill Abortion

Veterinarian reveals progress in development and testing of a vaccine to prevent epizootic bovine abortion.

Story & photo by **Troy Smith**, field editor

Among cattlemen it is commonly referred to as “foothill abortion” because it was originally recognized as an abortion disease occurring among cattle that grazed the foothill regions of California, western Nevada and southern Oregon. According to University of California–Davis veterinarian Jeff Stott, the disease’s technical name is epizootic bovine abortion (EBA) and, in



► Until recently, EBA control measures have been limited to management of breeding schedules and strategic animal movement, said Jeff Stott, University of California–Davis veterinarian. Testing of a vaccine is in the works.

infected herds, it can result in up to 90% fetal mortality.

Stott provided information about EBA and control efforts during the Applied Reproductive Strategies in Beef Cattle (ARSBC) symposium in Davis, Calif., this fall. He explained that a live virulent vaccine is currently being field-tested, but the future holds promise for development of a DNA-based vaccine to immunize cattle against EBA.

First recognized in the 1950s, EBA was characterized by near-term abortions or the birth of weak calves born to dams that had grazed foothill pastures during the first or second trimesters of pregnancy. In the 70s, researchers determined that the disease was spread through the bite of the soft-shelled *pajaroello* tick, which inhabits the region considered endemic for EBA. Not until 2005, though, was the infective organism — a mycobacterium dubbed *Pajaroellobacter abortibovis* — carried by the tick identified.

Reducing losses

According to Stott, EBA control measures have been limited to management of breeding schedules and strategic animal

movement. Fall calving has the potential to reduce EBA-associated losses, compared to spring calving, because early pregnancy then coincides with cold, wet weather, during which ticks are inactive.

Other measures include intentionally exposing replacement heifers to tick bites prior to breeding, so they can acquire immunity to EBA. Alternatively, heifers could be kept away from endemic regions during the first five months of pregnancy, which is the period of greatest susceptibility. In these ways EBA losses could be reduced in native cattle herds, except when variations in weather altered periods of tick activity. There was no way to protect naïve pregnant cattle moved into EBA endemic areas.

Stott said a serologic test for *P. abortibovis* has been developed and used as a method to detect mature cattle for exposure to the organism. Efforts to develop a vaccine were long thwarted by the inability to grow *P. abortibovis* in culture. However, the bacteria have been propagated in mice, which allowed development of an experimental vaccine. Testing of the vaccine has involved both University and private herds.

“In excess of 3,000 heifers have received the vaccine to date,” reported Stott. “The vaccine has provided excellent protection, most notably in those herds experiencing large yearly losses due to EBA. Preliminary studies suggest the vaccine will probably provide long-term immunity (two to three years) and possibly serve as the basis of lifelong immunity in the presence of sporadic exposure to the tick vector.”

Studies continue. Typically heifers have been vaccinated at least 60 days prior to breeding, but testing will also determine if administering the vaccine near breeding season (within 30 days) can induce early fetal losses.

Stott said work also has begun to gain a thorough understanding to the genomic makeup of the EBA causative organism, with the ultimate goal being development of a DNA-based vaccine for the future.

Stott spoke during Tuesday’s ARSBC session focused on the future. Visit the Newsroom at www.appliedreprostrategies.com to view his PowerPoint, read the proceedings or listen to his presentation.



Editor’s Note: *Troy Smith is a freelance writer and cattleman from Sargent, Neb. Comprehensive coverage of the symposium is available online at www.appliedreprostrategies.com. Compiled by the Angus Journal editorial team, the site is made possible through sponsorship by the Beef Reproduction Task Force.*