Fact Sheet: Bovine Rhinitis A & B

P2f Infectious Diseases

August 2025

Bovine Rhinitis A & B viruses

Bovine rhinitis A and B viruses (BRAV, BRBV) contribute to Bovine Respiratory Disease (BRD). They mostly infect cattle, with limited evidence suggesting potential spillover to sheep.

Infections are usually mild but may contribute to outbreaks. No vaccines are currently available.

Transmission

BRAV and BRBV are likely transmitted via aerosol and direct contact, with spread facilitated by stress, crowding, and co-infections, conditions commonly encountered in feedlot environments.

Treatment

There is no specific antiviral therapy available for BRAV or BRBV infections. Management involves supportive care and addressing co-infections.

Control and prevention

Currently, no vaccines are available for BRAV or BRBV. Control relies on broader BRD management strategies, including minimizing transport stress, improving ventilation, quarantining new arrivals, and controlling other respiratory pathogens.

Clinical signs and pathogenesis

Clinical signs are generally mild or subclinical, including nasal discharge, coughing, sneezing, and occasionally fever or upper airway irritation.

However, BRAV and BRBV may act as primary initiators or co-factors in respiratory outbreaks, often in co-infection with other pathogens. Both viruses infect epithelial cells of the nasal cavity and trachea, with BRBV frequently localized to these tissues in experimental and natural infections. Histopathological findings are minimal, with viral RNA detected in mucosal tissues. Both viruses may impair mucosal immunity, facilitating secondary infections by other BRD pathogens.

Key points

- BARAV and BRBV are RNA viruses from the *Aphthovirus* genus, *Picornaviridae* family.
- Both contribute to the Bovine Respiratory Disease Complex (BRDC), often in co-infection with other respiratory pathogens.
- Though typically causing mild signs, they can act as initiators or co-factors in respiratory disease outbreaks.

Microbial surveillance in dairy cattle

This series of fact sheets has been prepared for cattle vets. It covers a range of microbes that were identified by Dairy UP team in samples collected from cattle on NSW dairy farms in 2023 and 2024. As many of these viruses are new, and knowledge about them is still emerging, we have collated current knowledge as a handy reference.

About Dairy UP

Dairy UP is a research and development program to help NSW farmers unlock the potential of their dairy businesses. Led by the University of Sydney's Dairy Research Foundation, Dairy UP is delivered through NSW DPIRD, Scibus, Dairy Australia, and the University of Sydney.

Diagnosis

Bovine rhinitis A and B viruses, members of the *Aphthovirus* genus (*Picornaviridae*).

BRAV and BRBV are not available in routine diagnostic panels, yet they are increasingly recognized as contributors to the BRD.

They are primarily diagnosed using RT-PCR, which offers sensitive and specific detection. Viral isolation and sequencing are valuable for monitoring genetic diversity and tracking viral evolution. Although genetically distinct, both viruses exhibit regional variation and recombination, underscoring the importance of molecular surveillance in outbreak investigations.

References

Bhattarai, S., et al. (2022). Bovine rhinitis B virus is highly prevalent in acute bovine respiratory disease and causes upper respiratory tract infection in calves. Journal of General Virology, 103(2), 001714.

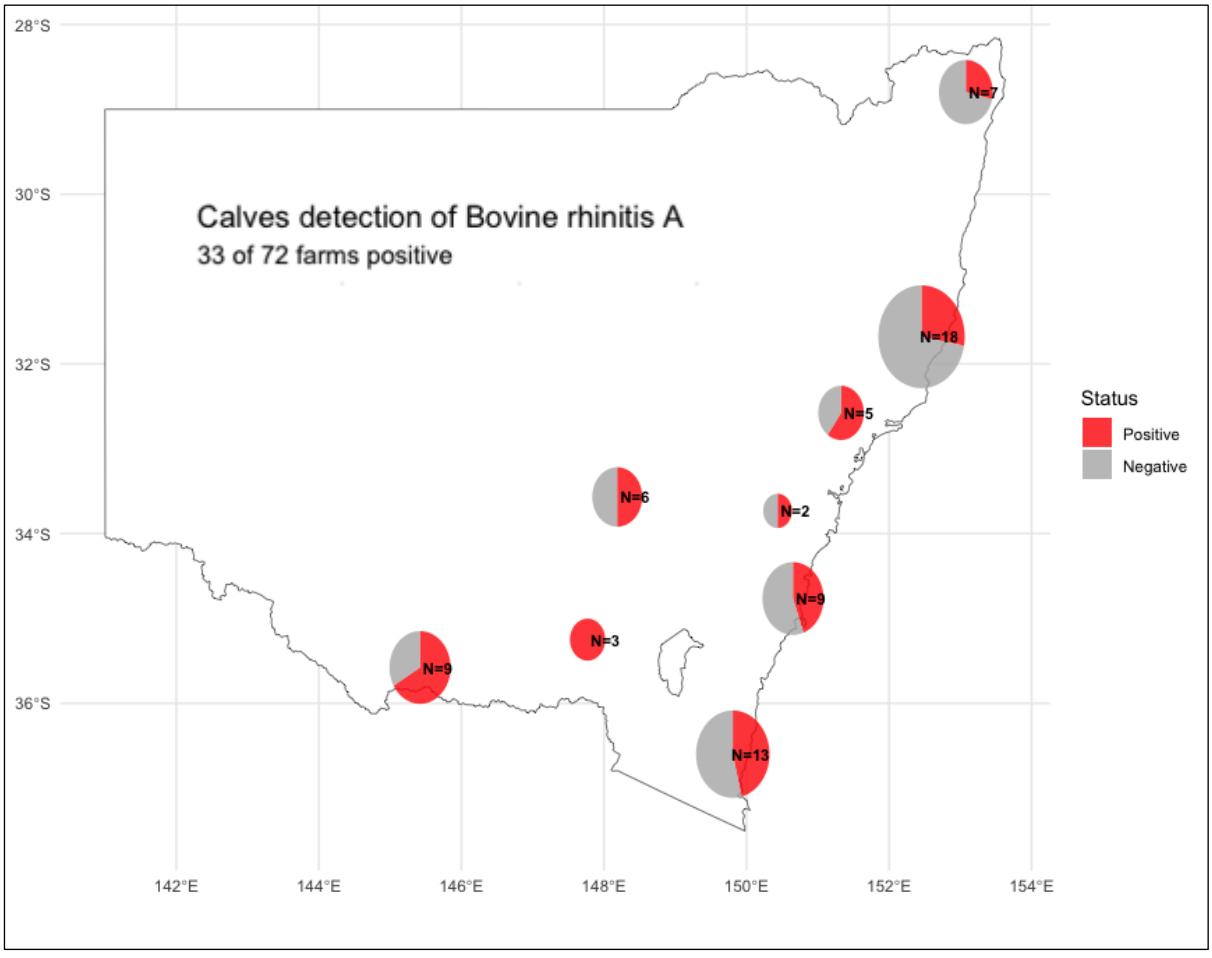
Hause, B.M., et al. (2015). Bovine Rhinitis Viruses Are Common in U.S. Cattle with Bovine Respiratory Disease. PLOS ONE, 10(3), e0121998.

Tóth, F., et al. (2024). Co-infecting viruses of species Bovine rhinitis B virus (Picornaviridae) and Bovine nidovirus 1 (Tobaniviridae) identified for the first time from a post-mortem respiratory sample of a sheep (Ovis aries) in Hungary. Infection, Genetics and Evolution, 120, 105585.

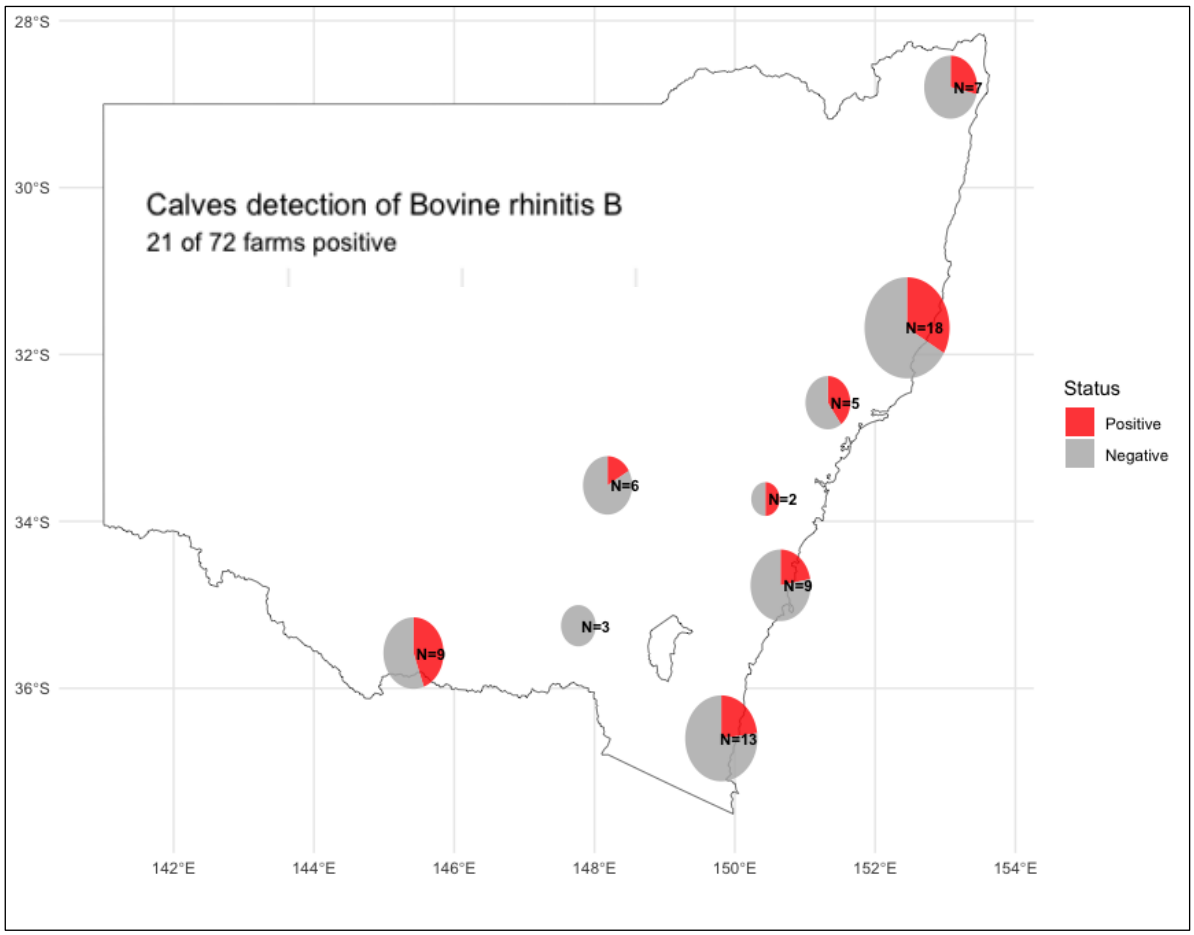
Zhou, Y., et al. (2023). Detection and Genomic Characterization of Bovine Rhinitis Virus in China. Animals, 13(2), 312.

More info

Project lead
Dr Barbara Brito Rodriguez
email: barbara.britorodriguez@dpi.nsw.gov.au



DairyUP
Unlocking potential



Delivery organisations

The University of Sydney Dairy Research Foundation | NSW Department of Primary Industries | Scibus | Dairy Australia

Partner organisations

NSW Farmers Growing the best | eastAUSmilk | Dairy NSW / Dairy Australia | AFMH | Leppington Pastoral Company Pty Ltd | NSW Local Land Services | Norco

Additional program supporters, collaborations or partnerships

Charles Sturt University | DairyBio | DataGene | Eagle Direct | Entegra
Macquarie University | NSW EPA | smaXtec | UC Davis | University of Technology Sydney

Thank you to the following organisations for specific funding for this project

McGarvie Smith Institute | Australian Government Australian Research Council | UTS