



**Project Number & Title:**

Innovation Project 2A-118: Drinking Water Quality and its Impact on the Health and Performance of Pigs

**Project Leader:**

Dr Louise Edwards (Ridley AgriProducts Pty Ltd)

**Project Participants:**

57 Industry Participants, Ridley AgriProducts Pty Ltd, The University of Melbourne

**Aims and Objectives:**

This Innovation Project aimed to develop a greater understanding of (1) the quality and management of drinking water being delivered to pigs on Australian pig farms and, (2) the impacts that it may be having on pig performance, health and welfare by specifically targeting the delivery of water-soluble antibiotics in drinking water.

**Key Findings**

- A survey of 57 industry participants representing 5 different states was successfully conducted. This study generated an understanding of the types of water sources being utilised and current water management practices. Samples of both source and drinking water were collected from all participating piggeries for water quality determination.
- Bore water was found to be the most common water source. On farm water management including cleaning and sanitation practices were found to be variable across farms. Accessibility at the drinker was inconsistent in terms of the type of drinkers, or combinations in use, the number of drinkers per head, their height and their location within the shed, including water flow rates.
- The quality of both the source and drinking water was found to be sub-optimal in one water quality parameter or more. The most common water parameters to exceed the acceptable standard were: pH, hardness, Cl, Na, Fe, Mn and microbiological levels. Typically, microbiological contamination was greater in the shed compared to the source. In most cases, producers did not appear to be routinely testing water quality.
- Despite many farms presenting with sub-optimal water quality only a relatively small number of participants had implemented water treatment systems. In contrast, over 75% of participants administered antibiotics in drinking water via a dosing medication system.
- Preliminary laboratory study findings indicated that the solubility, stability and antibacterial activity of several commercially available veterinary antibiotics appeared to be compromised when prepared in water from different farm water sources of sub-optimal quality. These initial observations warrant further investigation particularly when considering antimicrobial stewardship.

**Application to Industry**

The study findings suggest that water quality represents a significant challenge to the Australian Pig Industry. Simple steps were identified to assist producers assess their individual water quality challenges. Further research is required to understand the impact of sub-optimal water quality and in turn the most effective water treatment and management practices to ensure that pig performance, health and welfare is optimised. Over 75% of producers were administering antibiotics via drinking water however, preliminary findings from a laboratory study demonstrated that water of sub-optimal quality negatively impacted the solubility and anti-bacterial activity of commercially available antibiotics. The results indicate that good quality water and its management is essential for appropriate antibiotic use and in turn antimicrobial stewardship.