

Water for Pigs and Poultry

Providing water and measuring quality

Last updated December 2024

This Factsheet follows on from Factsheets 1 and 2 of this series and explores factors that might be considered when making decisions about water.

Water placement and delivery

Water usage in pig and poultry production is influenced by factors such as facility design, management and diet. Animals may also use water as a form of enrichment. With increased uncertainty in environmental conditions, monitoring water usage will be essential.

Positioning water sources, such as nipples or bowls, close to feeders can improve feed intake. However, care should be taken so that a water source such as a bowl is not contaminated by spilt feed. Cool water with a temperature of around 20 °C is preferred by animals. Water greater than 30 °C is hot and not favoured for drinking. Management options such as burying exposed pipes (especially if dark coloured) can help keep the water temperature cool.

Ensure adequate water supply and water flow

Adequate water must be available for animals at all times. Designing a system to ensure that supply is reliable for all conditions and all ages is important. Ensure manufacturer specifications for all components in the system are followed during installation and when in use. Water meters can be used to monitor water use so that animal growth is not negatively impacted. Service water pumps and backup generators regularly so that water outages don't occur. Water flow rate is important. Regularly check and maintain the system to ensure water flow is adequate for the class of animal. If flow is too slow the animal must spend more time at the drinker and so intake could be suboptimal. Alternatively, high flow rates often result in wastage.

Water filtration may be a consideration

Systems can use one or more methods to filter water (if required). Common examples include:

- ion-exchange e.g., softeners based on sodium or hydrogen ions;
- absorption e.g., activated carbon;
- mechanical e.g., polypropylene;
- sequestration e.g., polyphosphates;
- reverse osmosis.

For all options, the effectiveness of the method must be considered in combination with the cost.

Cleaning water sources and sanitisers

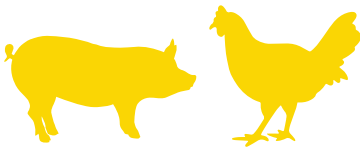
Water contamination can occur simply through the production process and by external sources, such as via rodents or birds, or runoff. Regular cleaning of drinkers and/or troughs is important. There are several sanitisers that can be used to clean water. Chemical, biocidal, physical and organoleptic properties are all important for an effective sanitiser. It is important to know the components in the water being sanitised when selecting an appropriate option, especially if a chloride compound is an ingredient in the sanitiser. Cleaning should be done according to product recommendations.

Flushing water lines

Check water lines by testing water samples from the beginning and end of the lines. It is recommended to flush water lines to prevent the buildup of biofilm (a mix made up of fungi, algae, bacteria, and other organic contaminants). This is particularly so when the weather is hot or water intake is low.

Specifics for pigs

Drinkers should be set-up according to a manufacturer's instructions. Generally, nipple drinkers should be about 50 mm above the shoulder of the smallest pig, about snout level or just above the backline of the pig and high enough off the ground to avoid breakage. It is recommended to have a drinker for every 10 to 15 pigs. Pigs may select a favourite drinker so if one is not working it may mean some pigs have a reduced water intake. Check water pressure of nipple drinkers for young pigs and set it at around 0.5 L/minute for piglets and weaners, around 1L/minute for growers and finishers and gestating sows, and around 2L/minute for lactating sows and boars. If pigs have experienced a shortage of water then they may have issues associated with water deprivation or they may develop salt toxicity.



Specifics for poultry

Drinkers should be set-up according to a manufacturer's instructions. Check drinkers every couple of days and if applicable adjust height and pressure according to chick growth. It is recommended to have nipple drinkers spaced at no further than 3 metres from the bird with 8 to 10 birds per nipple depending on bird weight. Check water pressure of nipple drinkers and set to around 20 mL/minute for birds up to 7 days of age, 60-70 mL/minute for birds between 7 and 21 days of age, and 70-100 mL/minute for those older than 21 days of age. If poultry have experienced a shortage of water then they may have issues associated with water deprivation or they may develop salt toxicity, of which both can hinder production targets.

Further information

Factsheet 1 of this series provides information about water requirements.

Factsheet 2 of this series provides information on issues associated with water quality and solutions

Education Notes 1 to 3 focus on water supply and demand for pork and poultry production, water quality and water salinity.

These Factsheets and Education Notes can be found at the Pork Innovation WA website: <https://www.piwa.com.au>

#This Factsheet has been written using the following references. Please refer to them for further information.

APL (2017). Producers' guide to pig production and nutrition. Australian Pork Limited.

APL (2016). Factsheet: Water supply to pigs. Australian Pork Limited.

DPI NSW (2014). Water for livestock: interpreting water quality tests. 2nd ed., Primefact 533, April.

DPIRD (2022). Water: the forgotten nutrient for pigs. Factsheet, Department of Primary Industries and Regional Development. Retrieved on 1 July 2024 from <https://www.agric.wa.gov.au/water/water-forgotten-nutrient-pigs>

H&N International (n.d.). Water quality for laying hens.

Menegat MB, Goodband RD, DeRouchey JM, Tokach MD, Woodworth JC and Dritz SS (2019). Kansas State University Swine Nutrition Guide: Water in Swine Nutrition.

Pfost DL, Fullage CD and Casteel S (2001). Water quality for livestock drinking. Extension, University of Missouri.

PIWA (2023). A case study: assessing the quality of source water fed to pigs in Western Australia. Factsheet, October.

Pluske JM and Pluske JR (2023). Is total dissolved solids a reliable proxy for chloride and sodium levels in water offered to pigs? *Animal- Science Proceedings* 14: 822-823.

Watson K, Wiedemann S and McGahan E (2020). *AgriFutures Chicken Meat Publication* 20-088.

This Factsheet was written as part of a project jointly funded through the Australian Government's Future Drought Fund and PIWA. In-kind support was provided by CEPA, DPIRD, Milne AgriGroup, PIWA and WAPPA.

Important Disclaimer: PIWA and the supporting organisations do not accept liability whatsoever by reason of negligence or otherwise arising from the use or release of this information or any part of it.

Measuring water quality

There are various hand-held instruments for measuring water quality. Regular calibration of these instruments should be done according to the manufacturer's guidelines. Multipurpose meters tend to be more complicated to use and calibrate but can provide e.g., pH, conductivity and Total Dissolved Solids (TDS) together. Instruments that provide just one measure, e.g., pH or TDS, tend to be easier to use and calibrate. Nevertheless, when considering TDS, salinity or conductivity measures, it is important that the interpretation of these results is made with due consideration to the composition of organic salts in the water. At this stage, the concentration of elements such as chloride and sodium can only be found through laboratory testing.