Providing quality water in adequate amounts is vital for poultry performance. Birds consume nearly twice as much water as they do feed. Anything that reduces their water intake will have an adverse effect on their feed intake.\(^1,2\)

The water supply is an important source of nutrition, but it also can be an entryway for diseases, leaving birds vulnerable and the entire flock exposed. Water lines can harbor pathogens, especially from biofilm buildup.\(^1\) Key water quality factors affecting water intake on poultry farms include pH, hardness and total dissolved solids.\(^3\)

The pH of water is a measure of its acidity or alkalinity. A numeric scale for measuring pH runs from 1 to 14. Neutral water (neither acid nor alkaline) has a pH of 7. Acidic water has a pH lower than 7; if pH is greater than 7, water is alkaline or basic.\(^3\) Measuring pH with a test kit generally is inexpensive.\(^4\)

Research shows that pH is a major factor in determining the amount of drinking water that birds consume. Along with pH, the chemicals used to control pH affect water’s palatability and the amount of water that birds drink. Chemicals used to modify water pH also affect efficacy of antimicrobials and disinfectants, as well as vaccines, mineral buildup in water lines and mineral transfer to the gut.\(^1\)

**KEY POINTS**

- The current recommendation for poultry water pH is within a range of 6 to 6.5.\(^1\) Birds have been shown to be tolerant of lower pH levels; however, a pH of 5 or lower can corrode metal.\(^4\)
- Maintaining optimum water acidity improves efficacy of vaccines, antimicrobials and disinfectants administered through the water system.\(^1\)
- Lower water pH reduces scale and biofilm buildup, which can harbor pathogens.\(^1\)
- Water pH of 5.5 to 7 keeps minerals suspended in water and increases the effectiveness of antimicrobials.\(^1,4\)
FUNCTION OF ACIDS AND pH CONTROL

Alkaline water can have a bitter taste that is undesirable to birds. Current research recommends that poultry water be maintained within a pH range of 6 to 6.5, but it’s been shown that birds are tolerant of pH 4 to 8 on a continuous basis. Birds are also tolerant of pH 2 to 3 for short periods.

Maintaining water pH at 5.5 to 7 will keep minerals suspended in water. Dropping pH below 5.5 will begin to dissolve scale from drinkers and pipes. A pH of 5 or lower can corrode metal.

At pH levels below 7, chlorine as hypochlorous acid is effective and fast-acting as a disinfectant. The recommended range of free chlorine in poultry water is 3 to 5 parts per million.

For good residual effect, pH should be below 4.5 for acids used as disinfectants in water lines.

Bird performance can be improved by maintaining water pH within an optimum range. The optimum water pH also improves the efficacy of vaccines, antibiotics and antimicrobials administered through the water system.

Controlling pH can help reduce scale and biofilm buildup in the water system. Lowering pH also can help lower bacteria populations, including Salmonella, in the water system and in birds.

Effective water acidification products are available to help maintain poultry water at optimum pH levels for better bird health and feed conversion.