# WATER QUALITY

The quality of the water and the amount consumed are extremely important in pork production — but unfortunately, these can also be two of the most overlooked aspects of an operation. Pigs that do not drink water will not consume feed. Signs of water-quality issues include those listed below:

- Off-color or unclear water or visually seeing sediment in the water are problematic. In addition, heavy discoloration of the equipment and walls around water sources can indicate a high manganese or iron content.
- Poor-quality water can have a foul odor. This can indicate high bacterial counts or elevated levels of sulfur and nitrates.
- Pigs scouring without any pathogens present indicates poor-quality water.

## Methods to improve water quality

- Flushing the water lines upon the entry of new pigs to a site should be followed with every turn.
- Adding chlorine to the water decreases the bacterial counts in the water and has been shown to increase water intake.
- Using low-cost acidifiers like citric acid lowers the water pH and inhibits bacterial growth.
    - Acid-Pak 4-Way can be used during times of low intake or health challenges to help support gut microbial populations and maintain optimal conditions for digestion in the stomach and small intestines. Acid-Pak 4-Way is a unique combination of buffered acidifiers, lactic acid-producing bacteria, enzymes and electrolytes. Adding it to drinking water is an effective approach to acidification and promotes gut health, especially when intake is low or variable.
- Utilizing a rural water system may be a good option if it is available.

## Water Intake Considerations

- Water is the first limiting nutrient, far above energy, amino acids, vitamins and minerals.
- The cost of water acquisition, along with the storage and disposal of wasted water, has led to the need for a better understanding of the water availability needs of pigs.
- Water consumption has a distinct pattern based on the feeding period when nose-operated drinkers are used.
    - Water consumption peaks two hours after the morning feeding period and one hour after the afternoon feeding period.
    - The greatest amount of water usage occurs in the late afternoon and early evening.
    - Having an adequate number of drinkers, along with sufficient water pressure, is key for proper water intake.
- The type of drinker affects water usage and wastage.
    - A 14% decrease in manure volume has been observed with a swinging drinker vs. a gate-mounted nipple drinker.
    - A 25% decrease in water usage has been observed with a steel bowl drinker vs. a swinging drinker.
- The general recommendation is to limit water pressure to 20 psi in drinking supply lines.
    - Keeping water pressure below 20 psi reduces wastage and makes delivery devices (e.g., paddles, nipples) easier to use.
- Daily water usage amounts are a good indicator of pig health.
    - When water usage drops for three continuous days or drops by more than 30% in one day, this may indicate that a potential health challenge is occurring.

## Water Quality Guidelines

Outlined below is a table listing the most common components evaluated in a water-quality test and the acceptable guidelines for levels of those components.

| Component | Caution Level |
|---|---|
| Calcium | 150 ppm |
| Chloride | 500 ppm |
| Hardness | 20 grains/gal |
| Iron | 0.3 ppm |
| Magnesium | 80 ppm |
| Manganese | 0.5 ppm |
| Nitrate | 50 ppm |
| pH | <6.5, >9.0 |
| Sodium | 150 ppm |
| Sulfate | 300 ppm |
| **Total dissolved solids** | **1,000 ppm** |

## Water Requirements

Included below are guidelines for the proper drinker height, flow rate and daily water consumption for wean to finish pigs.

| Pig weight | <12 lbs. | 12–30 lbs. | 30–75 bs. | 75–150 lbs. | 150–Market |
|---|---|---|---|---|---|
| Nipple height (in.) | 4 to 6 | 6 to 12 | 12 to 18 | 18 to 24 | 24 to 30 |
| Pigs/nipple | 10 | 10 | 10 | 12 to 15 | 12 to 15 |
| Flow rate (cups/min.) | 2/3 | 1 | 1½ | 2 | 3 |
| Daily intake (qts.) | 0.2 to 0.5 | 2 to 4 | 4 to 6 (1–1½ gal) | 5 to 10 (1/1½–2½ gal) | 6 to 18 (1½–4½ gal) |