

SECTION 6: WATER QUALITY

The quality of water and the amount consumed is extremely important in pork production, but unfortunately, it can also be one of the most overlooked aspects of production. Pigs that don't drink enough water won't consume enough feed.

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 a need for a greater understanding of the water availability needs of the pig.
- Water consumption has a distinct pattern based on the feeding period when nose-operated drinkers are used.
 - Peaks two hours after the morning feeding period and one hour after the afternoon feeding period
 - The greatest water usage occurs in late afternoon and early evening
 - Having an adequate number of drinkers, along with sufficient water pressure, is key to water intake
- The type of drinker affects water usage and wastage.
 - 14% decrease in manure volume with swinging drinker vs. gate-mounted nipple drinker
 - 25% decrease in water usage with steel bowl drinker vs. swinging drinker
 - Manure quality and ease of handling can be positively affected by reducing water wastage into the pit. With less wasted water ending up in the pit, nutrients are more concentrated, reducing the application expense and increasing storage capacity.
- The general recommendation is to limit water pressure to 20 psi in drinking supply lines.
 - Reduces wastage and makes delivery devices (paddles, nipples) easier to use
- Daily water usage is a good indicator of pig health.
 - When water usage drops for 3 continuous days or drops by more than 30% in one day, this may indicate that a potential health challenge is occurring

Water quality guidelines

Below is a table that lists the most common components that are evaluated in a water quality test, as well as the acceptable guidelines.

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

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 lbs	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	1 ½	2	3
Daily intake (qts)	0.2 to 0.5	2 to 4	4 to 6 (1–1 ½ gal)	5 to 10 (1 ½–2 ½ gal)	6 to 18 (1 ½–4 1/2 gal)

Water quality FAQs

Q: How can I tell if my pigs are getting enough water?

A: Using the table above will give broad guidelines on where the water usage should be depending on the size of the pig. The best way to determine if pigs are receiving adequate water is at the slat level. Observations should be made when pigs are active and undisturbed by chore activities. If there is a line greater than three pigs at the water source during an active period, water is limiting. Water demand in the summer increases because of the extra water pigs need to drink in order to stay cool and hydrated. Also, the pigs' active periods are reduced, causing higher demand on a water source during shorter time windows.

Q: Are there any obvious signs of water-quality issues?

A:

- Obvious signs of water quality problems can be observed by sight, smell and pig observation.
- Visual signs of poor water quality include off color, unclearness or visual sediment in the water. In addition, heavy discoloration of equipment and walls around water sources can indicate high levels of manganese or iron.
- Poor-quality water can have a foul odor. This can indicate high bacterial counts or high levels of sulfur and nitrates.
- Pig observation can indicate water quality problems as well. One indicator of poor-quality water is if pigs refuse water upon initial entry into a site. In addition, when pigs scour without any pathogen present, this indicates poor-quality water.

Q: I think I have a water-quality problem on my farm. How can I get my water tested?

A: In most cases, there are local labs that do water-quality testing in your area. Speak with your veterinarian or nutritionist for help with collecting water samples. New wells and existing wells should be tested on a consistent basis for water quality.

Q: What can I do to improve water quality on my farm?

A:

- Flushing water lines upon entry of new pigs to a site is a great practice that should be followed with every turn of pigs.
- Adding chlorine to the water decreases bacterial counts in the water and has been shown to increase water intake.
- Using low-cost acidifiers like citric acid decreases the water pH and inhibits bacterial growth.
- Utilizing a rural water system may be a good option if it is available in your area.