

A CHECKLIST FOR WATER USE

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Like energy, protein, minerals and vitamins, water is a nutrient that is required in the diet of the pig. Indeed, the pig can survive much longer without these other nutrients than it can without water. This becomes especially true in hot weather.

Pigs obtain water from three sources: water physically contained in the feed, water consumed by drinking, and water produced through chemical reactions as part of normal metabolism in the body. Maintaining water balance is extremely important, as even small changes in water balance can result in serious consequences to the pig. The water requirements of the pig have never really been defined. Research at the Prairie Swine Centre and elsewhere has found that free choice water intake in young growing pigs with free access to feed is about 2.2 to 2.8 times the intake of feed. Thus, a pig eating two kilograms (kg) of feed will normally drink at least 4.5 litres of water per day.

Nursing sows have a somewhat higher intake, approaching four times their feed intake, due to the water needed for milk production. The above estimates do not allow for wastage, which can be quite high (40+%), especially with nipple drinkers. Also, additional water must be added to the above intake levels to compensate for hot weather, excess minerals or protein in the diet, or to help the pig deal with certain health problems such as scours. Pigs do not drink only to satisfy their physiological need for water. Pigs will also drink water to alleviate a feeling of hunger, or out of boredom. The impact of “luxury” intake must not be underestimated, especially in gestating sows since they are limit fed; boredom and hunger can increase water intake many fold over basic requirements. One critical question for pork producers is what are the minimum and maximum flow rates necessary to optimize health and productivity?

While solid research on the subject is limited, reasonable estimates can be provided: weanlings and growers – 750 to 1,000 millilitres per minute (mL/min) and nursing sows - 1,000 to 2,000 mL/min. Water quality is also a common issue on the Prairies. Quality can be evaluated using microbiological, physical and chemical criteria. Within each, individual items relate to safety and/or aesthetics. For pork producers, iron and manganese can be problematic, since they plug screens and cause other delivery problems. For example, iron will cause problems in screens if it is above 0.3 parts per million (ppm); the tolerance for manganese is 0.05 ppm. Filters, chemical treatment or settling tanks can all be used to reduce iron and manganese in the water. However, the most common concerns of pork producers are associated with sulphates, which cause diarrhea and at very high levels, poor performance. A recent study, conducted with the cooperation of Stomp Pork Farms in Leroy, Sask., demonstrated that weanlings can perform quite well with water containing 1,600 ppm sulphates.



Water Intake, Recommended Flow Rate and Height of Nipple Drinkers

Phase	Weight	Intake (Litres/day)	Nipple Drinkers		
			Flow (L/min)	Height (cm, 45 ⁰)	Height (cm, 90 ⁰)
<i>Gestation</i>		Variable	0.5 - 1.0	90cm (35")	70cm (30")
<i>Lactation</i>		12-20	1.0 - 2.0	90cm (35")	75cm (30")
<i>Piglets</i>		Variable	0.5 - 0.7	15cm (6")	10cm (4")
<i>Weanling</i>	5	1.0 - 2.0	0.5 - 1.0	30cm (12")	25cm (10")
<i>Weanling</i>	7	1.5 - 2.5	0.5 - 1.0	35cm (14")	30cm (12")
<i>Growout</i>	15	2.5 - 3.0	0.5 - 1.0	45cm (18")	35cm (14")
<i>Growout</i>	20	3 - 4	0.5 - 1.0	50cm (20")	40cm (16")
<i>Growout</i>	25	3 - 4	0.5 - 1.0	55cm (22")	45cm (18")
<i>Growout</i>	50	5 - 7	0.5 - 1.0	65cm (26")	55cm (22")

Factors Affecting Ad Libitum Water Intake

Increase Intake	Decrease Intake
Heat stress	Cold stress
Hunger	Warm water temperatures
Boredom	Very saline water
Elevated dietary protein	
Elevated dietary minerals	
Moderately elevated minerals in the water	
Pelleted feed	