

Water Usage by Grower-Finisher Pigs Using Dry and Wet/Dry Feeders

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Summary

Water conservation is a growing concern in intensive swine operations (ISOs) for both financial and environmental reasons. The water usage of a grower-finisher room in an ISO was measured using dry and wet/dry feeders. The major source and sink of water was at the drinker and in the manure, respectively. In addition, water disappearance and manure volume were reduced from 9.3 to 6.2 and from 8.9 to 5.4 kg water/pig-day, respectively, when wet/dry feeders were used in place of dry feeders. Therefore, wet/dry feeders are an effective alternative for reducing water usage and manure volume of grower-finisher barns.

Introduction

To address water conservation in intensive swine operations, the significant sources and sinks of water (water balance) need to be identified to know where to focus research efforts. Previous studies have shown that use of wet/dry feeders in place of dry feeders has potential water savings. The objective of this study was to systematically measure and report the water usage of grower-finisher swine using dry and wet/dry feeders.

Experimental Procedures

Six separate grower-finisher cycles were followed and the parameters of water usage, including water from the drinkers, in the feed, metabolic reactions within the pig, ventilated from the room and in the manure, were measured for each cycle.

Results and Discussion

Table 1 presents a summary of the average values for the water balance measured over the six cycles. The significant source and sink of water was at the drinker, at 72% of the total water source, and in the slurry, at 64% of the total water sink, respectively. The use of wet/dry feeders compared to dry feeders significantly reduced both the water disappearance at the drinker by up to 34% ($p < 0.05$), as seen in Figure 1, and the volume of the slurry by up to 29% ($p < 0.05$) for finisher pigs.

Pig performance was not significantly different for dry and wet/dry feeders ($p > 0.05$), although by the end of the finisher phase, the pigs on wet/dry feeders were generally 5% larger than the pigs on the dry feeders. The feed conversions (FC) were similar for pigs on both dry and wet/dry feeders, with the FC being slightly higher for pigs on wet/dry feeders.

*Wet dry feeders reduced
water disappearance by 34%
and volume of slurry by 29%.*

Implications

Future research on water conservation in an ISO should focus on the drinker and on the manure. Use of wet/dry feeders versus dry feeders generally resulted in less water being used and less manure to handle, decreasing the water usage and storage and handling costs.

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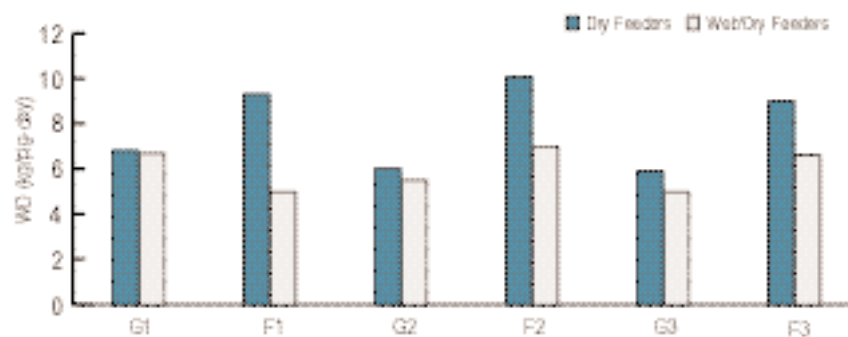


Figure 1: Average water disappearance (WD) for all grower (G1, G2 and G3) and finisher (F1, F2 and F3) trials.

Table 1. Summary of average water balance over three grower-finisher cycles.

Water Usage Components	Parameters	Water (kg/pig-day)			
		Grower		Finisher	
		Dry*	Wet/Dry**	Dry	Wet/Dry
Inputs	Water Disappearance	6.0	5.4	9.3	6.2
	Feed Water	0.3	0.3	0.5	0.5
	Metabolic Water	1.0	1.0	1.6	1.6
Outputs	Manure Water	-5.5	-4.4	-8.9	-5.4
	Pig Water	-0.4	-0.4	-0.7	-0.7
	Ventilated Water	-2.6	-2.7	-4.1	-3.4
Error		1.3	0.8	2.2	1.3

* Dry: dry feeder

** Wet/Dry: wet/dry feeders.

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