

Reducing Water Waste From Nipple Drinkers by Growing-Finishing Pigs

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Summary

Growing/finishing pigs can maintain adequate water intake from a variety of drinker types and drinker management protocols. However, water waste from drinkers can be very different depending on drinker type and management. Well-managed nipple drinkers can reduce water waste to the same level as bowl drinkers.

Introduction

Our previous study indicated water waste from a nipple drinker could be 40% of water disappearance when the drinker was never raised, rather than being adjusted to a recommended level (2.5 cm above pig shoulder). Keeping the drinker height at the recommended level for growing/finishing pigs means the drinker has to be adjusted as the pigs grow. This is rarely done on commercial farms. A new setup of nipple drinkers was used to maintain the drinker at the recommended level for pigs throughout the whole growout period without adjusting its height. Productivity, water use, manure output, and drinking behaviour were compared among pigs from different types and management of drinkers to test the feasibility of the new setup.

Experimental Procedures

Sixteen pens of 18 pigs in a grower/finisher room were used for the 12-wk study. Four types

of drinker systems were tested: improved nipple drinkers (new setup), well-managed nipple drinkers, conventional nipple drinkers, and bowl drinkers. The improved nipple drinker was set at 73 cm of height, which is the recommended nipple height for pigs at the body weight of 100 kg. In order to allow the young pigs to reach the nipple drinker, a step was placed beneath the drinker. The height of the step was 25 cm, so the distance between the nipple and the top of the step was 48 cm; that is the recommended nipple height for pigs of 25 kg. The well-managed nipple drinker was adjusted to the recommended height every two weeks according to body weight of the pigs. The conventional nipple drinkers and bowl drinkers were mounted at the height of 48 cm, and not adjusted throughout the whole growing/finishing period as on many commercial farms. Four pens were randomly assigned to each of the drinker treatments. Growth rate, water disappearance, manure output, and drinking behaviour were determined.

Results and Discussion

Final body weight, variations in final body weight, and growth rate were similar among pigs on different drinkers (Table 1). Water disappearance from pigs on the bowl drinkers was lower than pigs on other drinkers during the growing period (Table 1). However, during finishing period, water disappearance for pigs

on the bowl drinkers was as high as conventional nipple drinker. The overall water disappearance from pigs on the improved nipple drinkers was similar as those on the well-managed nipple drinkers and bowl drinkers. In comparison with pigs on the conventional nipple drinkers, water disappearance from pigs on the improved nipple drinkers was reduced by 13%. Daily manure output from pigs at different drinkers was similar during the first 4 weeks (Figure 1). Pigs on the conventional nipple drinkers and bowl drinkers produced more manure from wk 4 and wk 8, respectively. The overall average daily manure output from pigs on the improved nipple drinkers was 10% lower than that on conventional nipple drinkers, but similar to those on the well-managed nipples and bowl drinkers. Pigs spent more time drinking from bowl drinkers. Pigs on the improved nipple drinkers spent similar time drinking as those on the well-managed nipple drinkers.

Implications

The new setup of nipple drinkers could reduce water wastage without impairing pig performance and drinking behaviour.

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Table 1. Initial and final body weight, coefficient of variation, and water disappearance of growing/finishing pigs at different drinkers.

Item	Bowl	Conventional nipple	Well-managed nipple	Improved nipple	SEM	P <
Initial						
BW, kg	31.5	31.8	31.7	32.1	0.67	NS*
CV, %	13.3	16.3	14.5	12.8	1.21	NS
Final						
BW, kg	104.2	106.0	102.9	104.0	1.98	NS
CV, %	10.8	10.6	10.5	10.8	1.18	NS
Water disappearance, L/pig/d						
Wk 0-4	4.36 ^a	5.41 ^b	5.46 ^b	4.79 ^{ab}	0.241	0.01
Wk 4-8	6.51 ^a	7.56 ^b	6.89 ^{bc}	6.61 ^{ac}	0.293	0.06
Wk 8-12	7.88 ^b	7.84 ^b	6.87 ^a	6.68 ^a	0.345	0.05
Wk0-12	6.25 ^a	6.94 ^b	6.40 ^{ab}	6.03 ^a	0.247	0.08

BW = average body weight of pigs, CV = coefficient of variation.

*NS = no significant difference (P > 0.10).

a,b,c Within a row, means without a common superscript letter differ (P < 0.05).

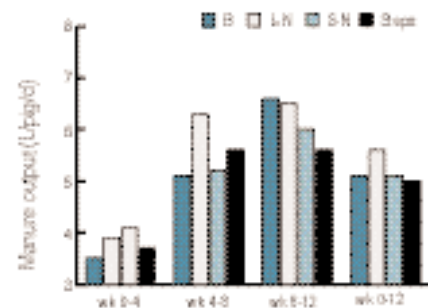


Figure 1: Manure output from growing/finishing pigs at different drinkers. B = bowl drinker, L-N = conventional nipple drinker (nipple height set up at 48cm), S-N = well-managed nipple drinker (height of nipple drinker adjusted according to pig weight), Steps = improved nipple drinker (nipple drinker with step underneath).