



# Effects of Nipple Drinker Height and Flow Rate on Water Wastage in Grower and Finisher Pigs

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## Summary

An experiment was conducted to study the effects of height and flow rate of nipple drinkers on water wastage in pigs. Results show water wastage can be reduced by up to 20% by adjusting nipple height. High flow rate resulted in higher water wastage.

## Introduction

In our previous study on water wastage, grower/finisher pigs wasted 25% of water from the nipple drinker at standard flow rate (700 ml/min) and height (5 cm higher than the shoulder height of the smallest pig). However, on commercial farms, water wastage from a nipple drinker is reported as high as 40~60%. The difference between these results may partly be attributed to the improper drinker height and flow rate on pig farms. This study focused on effects of drinker height and flow rate on water intake and wastage in grower/finisher pigs.

## Materials and Methods

Four pens of eight female pigs were tested during the 12 week study. Water disappearance, water wastage, and feed intake were measured at two stages, i.e. week 1~4 for growers, and week 8~12 for finishers. In each stage, drinkers were set up at two heights, i.e. five cm higher than the shoulders of the smallest pigs in the pen (standard height) or 33 cm (low height). At each drinker height, two flow rates, 500 and 1000 ml/min, were employed. Pigs in each pen were exposed to each treatment combination for one week, and the data were collected during the last four days of the week. Body weight was measured individually at the start of each test and every two weeks thereafter. Feed intake was determined every week on a pen basis.

## Results and discussion

Nipple height did not affect feed and water intake in either growers or finishers (Table

1). Water intake was about two times feed intake. The low nipple height increased water wastage by about 10% (from 26% to 35%) in growers and 20% (from 18% to 39%) in finishers. The flow rate of nipple drinkers did not change feed intake and the ratio of water to feed intake (Table 2). Water wastage was increased by about 7% at the higher flow rate in both grower and finisher pigs. The flow rates employed in the study were lower than that usually used on commercial farms. Higher flow rates could result in more water spillage from nipple drinkers. Water wastage at each treatment combination is shown in Table 3.

## Conclusion

By adjusting nipple drinker height, water wastage can be reduced by up to 20% in grower/finisher pigs. High flow rate can result in more water spillage from nipple drinkers.

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**Table 1** Effect of nipple heights on water intake and wastage

Stage	Growers		Finishers	
	Standard	Low	Standard	Low
BW, kg	23.5	23.3	68.6	68.5
ADFI, kg/d	1.2	1.3	2.4	2.3
Water disap., L/d	3.3	3.8	5.2	7.2
Water intake, L/d	2.5	2.5	4.2	4.3
Water intake/ADFI, L/kg	2.0	2.0	1.8	1.9
Wastage, %	25.9	34.6	17.7	39.0

**Table 2** Effect of flow rate of nipple drinkers on water wastage

Stage	Growers		Finishers	
	1000 ml/min	500 ml/min	1000ml/min	500 ml/min
Body weight, kg	23.5	23.4	68.6	68.4
Feed intake, kg/d	1.3	1.2	2.4	2.4
Water disap., L/d	4.0	3.2	6.6	5.8
Water intake, L/d	2.6	2.3	4.4	4.1
Water intake/ADFI, L/kg	2.1	1.9	1.9	1.8
Wastage, %	34.0	26.5	31.0	25.7

**Table 3** Water wastage as % of water disappearance by pigs at nipple drinkers

	Growers		Finishers	
	1000 ml/min	500 ml/min	1000ml/min	500 ml/min
Standard nipple height	29.5	22.2	20.3	15.1
Low nipple height	38.4	30.8	41.8	36.3