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Effects of feeder design and pelleting on growth performance and water use in finishing pigs

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EFFECTS OF FEEDER DESIGN AND PELLETING ON GROWTH PERFORMANCE AND WATER USE IN FINISHING PIGS

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Summary

Pigs fed from wet-dry feeders had 4% greater ADG with 50% less water usage than those consuming feed from dry feeders. Pelleting diets improved F/G by 4% compared to meal diets. However, the benefits of pelleting were primarily when a dry feeder was used, with little evidence to support use of both pelleting and wet/dry feeders for finishing pigs.

(Key Words: Finishing Pigs, Feeders, Pellet.)

Introduction

Feed costs represent 60 to 70% of the total cost of production for a farrow to finish swine operation. The growing-finishing phase will account for the majority of those diet costs. Therefore, reducing cost of gain would greatly affect the overall profitability of a swine operation. We have reported previously that pelleting improved feed efficiency (and in some cases ADG) and reduced the amount of nutrients excreted as feces. Regulating water usage is also of great concern to many producers. Data given in the 1994 KSU Swine Day Report (p 168) suggested that a wet/dry feeder design decreased water disappearance and improved efficiency of gain in finishing pigs. Thus, we conducted an experiment to determine if the beneficial effects of pelleting and wet/dry feeder design are additive.

Procedures

A total of 288 finishing pigs (initial wt of 104.5 lb) was used in a 35-d growth assay. The pigs were allotted by initial weight,

gender, and ancestry to the treatments: 1) dry feeder with meal diet, 2) dry feeder with pelleted diet, 3) wet/dry feeder with meal diet, 4) wet/dry feeder with pelleted diet. The experiment was conducted as a 2×2 factorial with eight to 10 pigs per pen and eight pens per treatment. Diets were ground through a 1/16-in screen with approximate particle size of 600 microns and pelleted through a 3/16-in die. Feeder designs were a simple two-hole, dry feeder (Pride of the Farm®) and a single-hole, wet/dry shelf feeder with a nipple waterer located at the base of the trough (Crystal Spring®). The pens with dry feeders were equipped with one nipple waterer mounted against the wall. Each pen was equipped with a water meter to measure water disappearance. The pens were 10 × 16 ft with concrete (50% solid and 50% slat) flooring. All data were analyzed using the GLM procedure of SAS. Pen was the experimental unit.

Results and Discussion

Pigs fed from the wet/dry feeders had 4% greater ADG than those fed from the dry feeders ($P < .04$). Feeder design had no effect on ADFI or F/G ($P > .24$). Pigs fed the pelleted diet consumed less feed and had better F/G ($P < .02$ and $P < .01$, respectively) than pigs fed the diet in meal form. However, an interaction was noted among feeder type and diet form. In dry feeders, pelleting improved efficiency of gain by 7%, but with the wet/dry feeders, pelleting improved efficiency of gain by only 1% (feeder type × diet form interaction, $P < .04$). Thus, there would be little reason to install a pellet mill if wet/dry feeders were used or to purchase wet/dry feeders if pellets are being fed. We should note, however, that water disappear-

ance was 50% less ($P < .001$) when pigs fed from the wet feeders. Thus, even when pelletized feed is used to maximize efficien-

cy of gain, wet/dry feeders could help to reduce water wastage and waste management concerns.

Table 1. Diet Composition^a

Ingredient	Percent
Corn	77.97
Soybean meal (46.5% CP)	17.84
Soybean oil	1.50
Monocalcium-phosphate	1.03
Limestone	.91
Salt	.30
Vitamin and mineral premixes	.25
Lysine-HCl	.15
Antibiotic ^b	.05

^aDiets were formulated to .85% lysine, .65% Ca, and .55% P. Diets were ground through a 1/16-in screen with approximate particle size of 600 microns and pelleted through a 3/16-in die or fed in meal form.

^bProvide 40 g/ton tylosin.

Table 2. Effect of Feeder Design and Pelleting on Growth Performance and Water Disappearance in Finishing Pigs

Item	Dry		Wet/dry		CV	Contrasts ^b		
	Meal	Pellet	Meal	Pellet		1	2	3
ADG, lb	2.26	2.16	2.30	2.30	5.0	.04	-- ^c	--
ADFI, lb	5.98	5.30	5.78	5.73	7.1	--	.02	.04
F/G	2.65	2.45	2.51	2.49	3.9	--	.01	.04
Water, g/d	1.6	1.7	1.1	1.1	13.7	.001	--	--

^aA total of 288 finishing pigs (8 to 10 pigs/pen and 8 pens/treatment) with an average initial wt of 104.5 lb and an average final wt of 183.5 lb.

^bContrasts were: 1) wet/dry versus dry, 2) meal versus pelleted, and 3) the interaction of feeder type and diet form.

^cDashes = $P > .15$.