Effect of weaning body weight and nursery phase feeding budget on nursery pig growth performance, fecal dry matter, and economics

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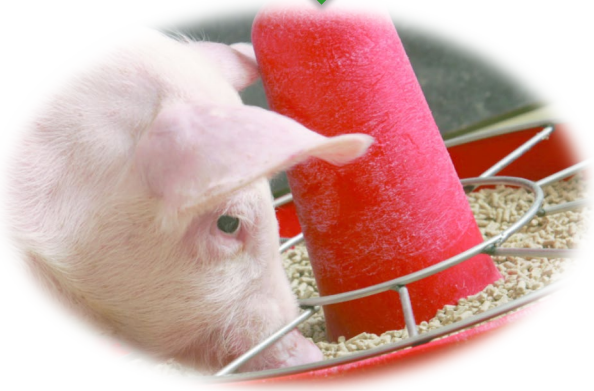
Introduction

Easily digestible protein and lactose sources



- Complex diets are expensive and may not be cost-effective.
- Complex diets maximize performance, but excess nutrients in the large intestine could increase the incidence of diarrhea.

Introduction

Diet complexity ≠ Chemical composition

Diet A

SID Lys: 1.30%

SID Lys:NE, g/Mcal: 5.11

Diet B

SID Lys: 1.30%

SID Lys:NE, g/Mcal: 5.11

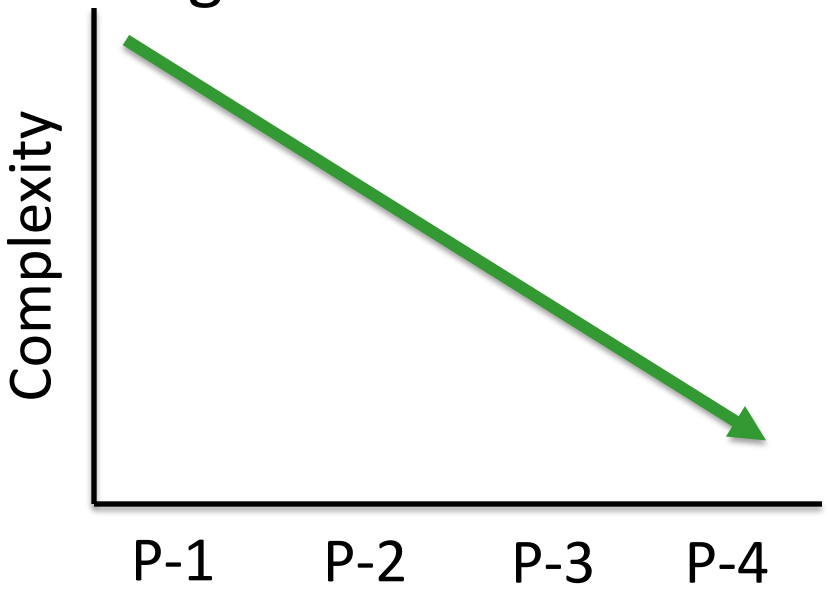
Diet complexity refers to the diversity and characteristics of the ingredients included in a diet.

Stimulate feed intake

Dritz et al., 1996

Introduction

During the nursery period, a three or four-phase diet program is often used. Each diet's feed budget is assigned according to the group's average weight.

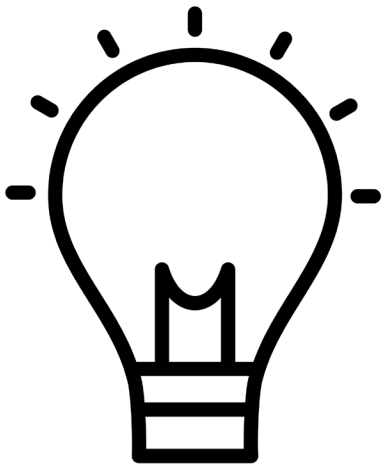


Several studies have demonstrated that using simple versus complex diets doesn't impact overall wean-to-finish performance due to the compensatory gain during the late nursery and finishing period.

Reinhardt et al., 2019; González-Solé et al., 2024

Objective

To evaluate the effect of phase feeding budget and weaning weight on nursery pig performance, fecal dry matter, and economics.



Materials and Methods

- Two experiments were conducted under university conditions (270 and 360 pigs).
- DNA genetics.
- 5 pigs/pen.
- Experiment 1: gilts/barrows; Experiment 2: barrows.
- Each pen was equipped with 4-hole dry feeder and a cup drinker.
- Pellet diets

Treatments

Factor 1:
Body weight

Factor 2:
Phase 1 and 2 budgets

	Feed budget		
	High	**Medium**	**Low**
Phase 1, lb/pig	4	2	--
Phase 2, lb/pig	12	8	4
Phase 3, lb/pig	Ad libitum		

	Phase 1	Phase 2	Phase 3
Corn	45.0	57.6	62.3
Soybean meal	16.3	22.4	32.7
Spray-dried whey	25	10	---
Spray-dried bovine plasma	2.5	---	---
Specialty soybean meal	5.0	5.0	---
Feed-grade amino acids	0.85	1.08	1.06
Macro minerals	1.45	2.24	2.52
Zinc oxide	0.39	0.25	---
Copper sulfate	---	---	0.07
Others	3.48	1.43	1.43
Calculated analysis			
SID Lys, %	1.35	1.35	1.35
SID Lys:NE, g/Mcal	5.11	5.39	5.50
CP, %	20.40	20.87	21.56
Lactose, %	18.0	7.2	---
STTD P, %	0.50	0.50	0.50

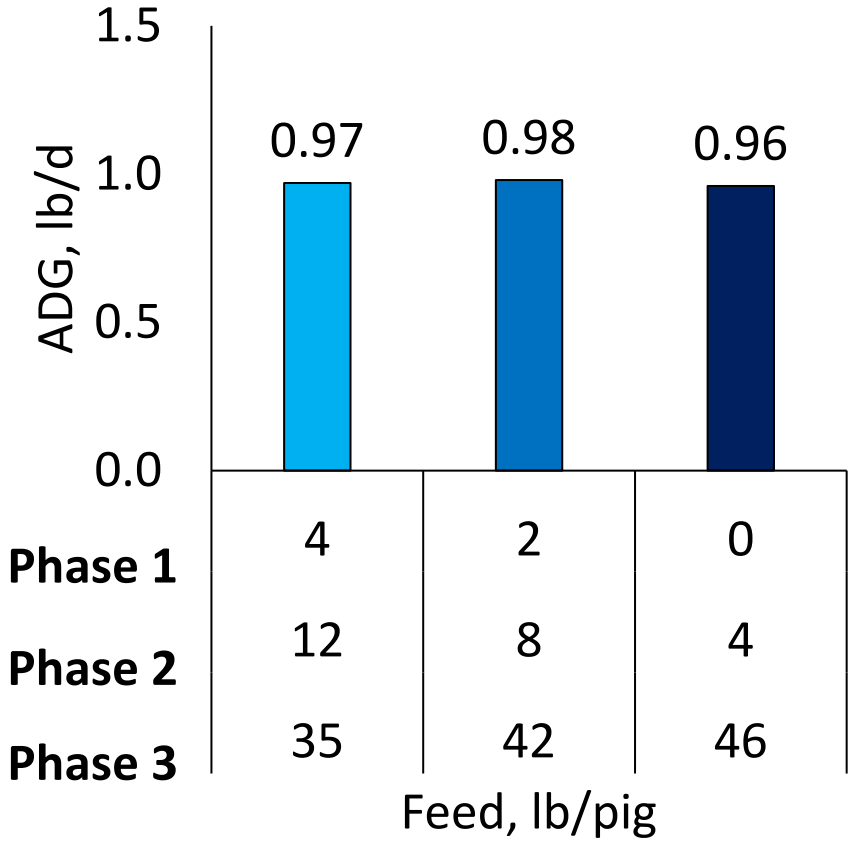
Arroyave et al., 2025

Results

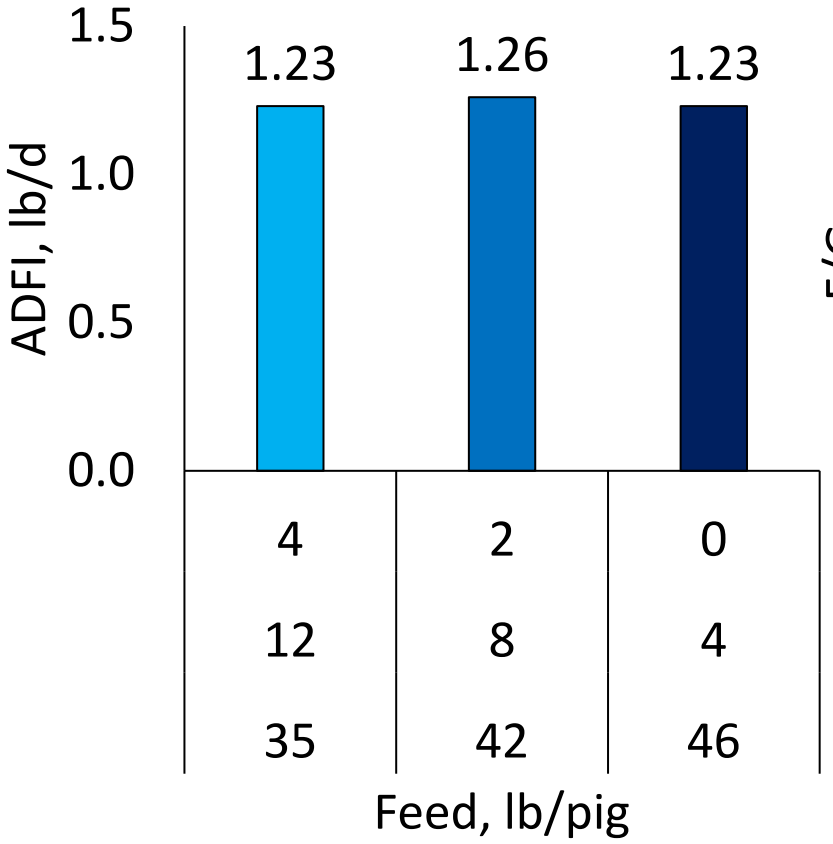
No significant interactions ($P > 0.10$) were observed between the budget program and BW category in any of the experiments.

Overall Performance, Exp. 1 (d 0 to 42)

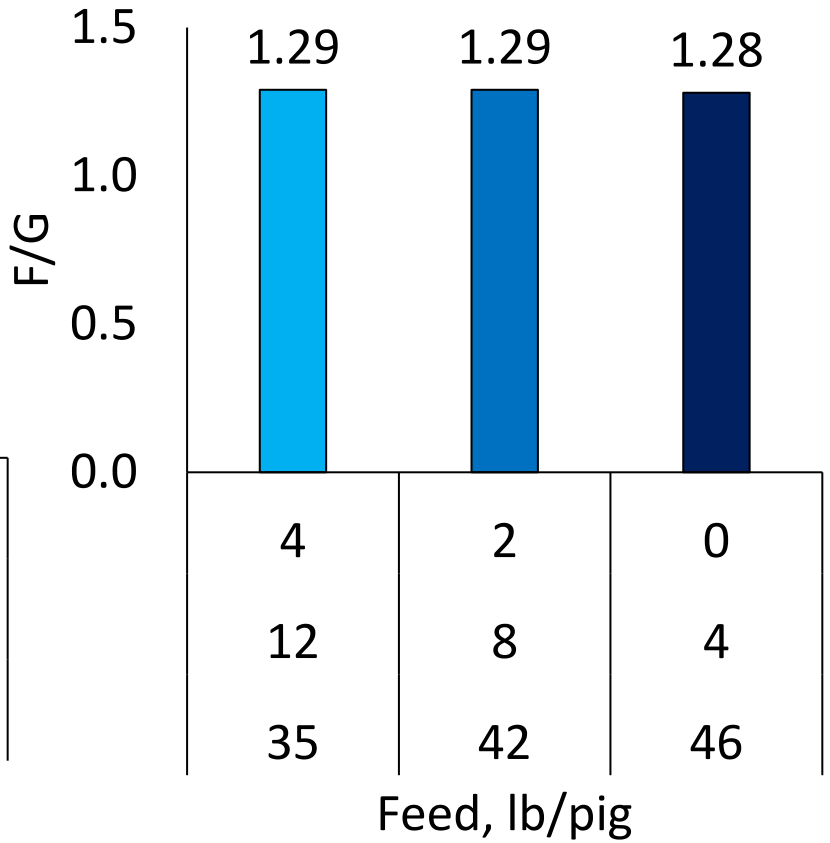
P = 0.601
SEM = 0.027



P = 0.550
SEM = 0.035



P = 0.771
SEM = 0.010



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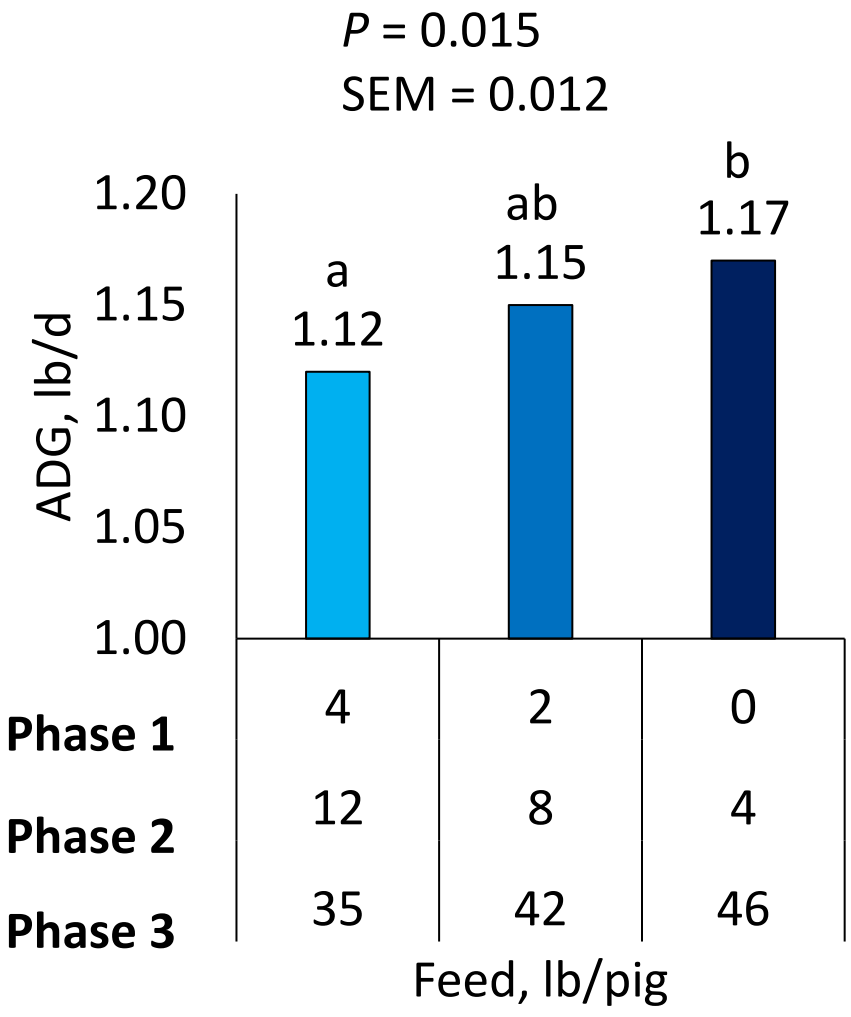
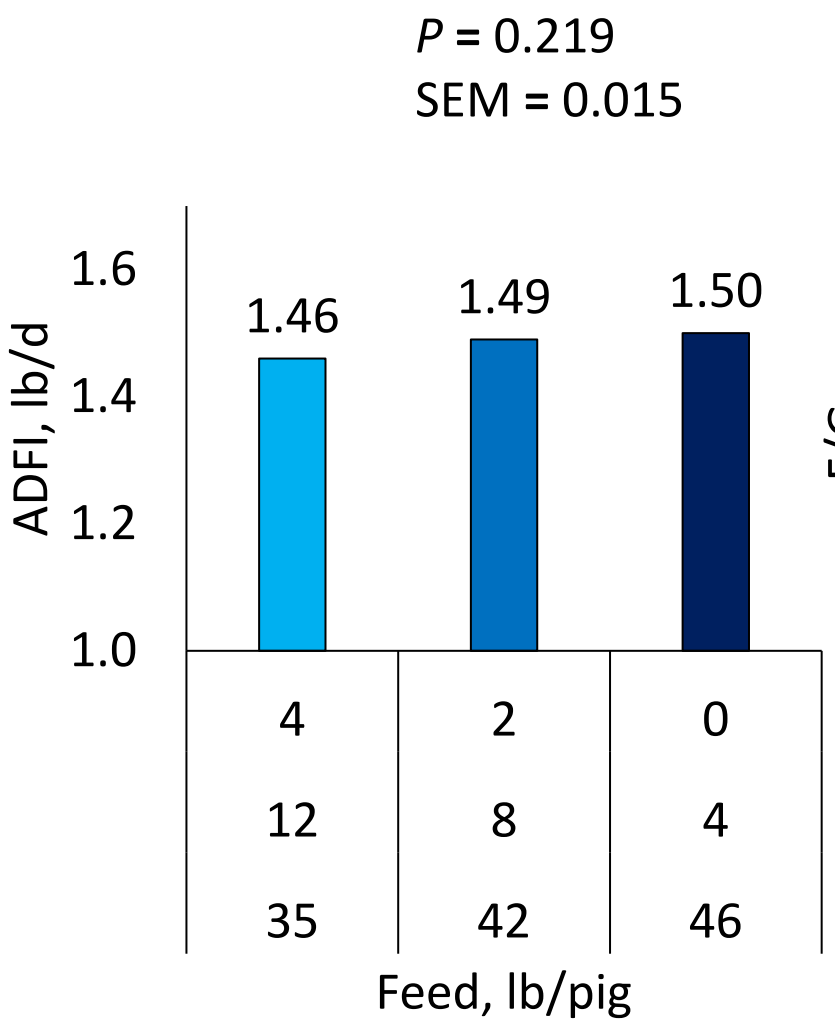
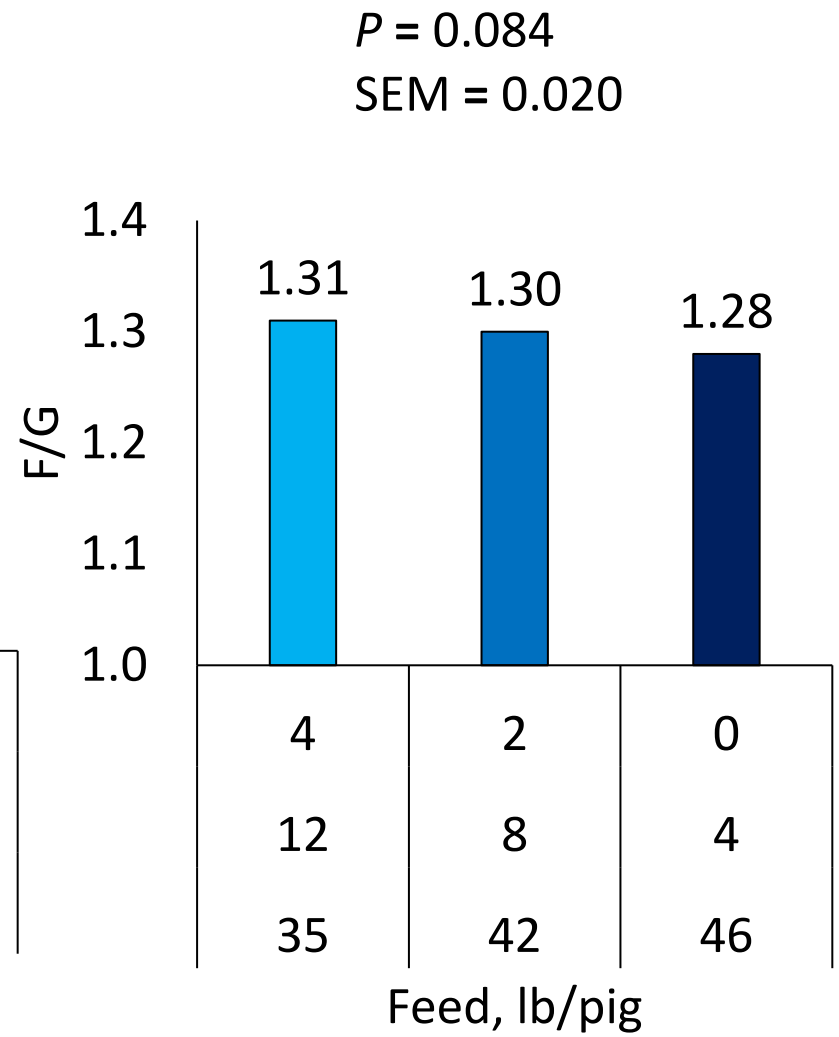
Overall Performance, Exp. 2 (d 0 to 43)







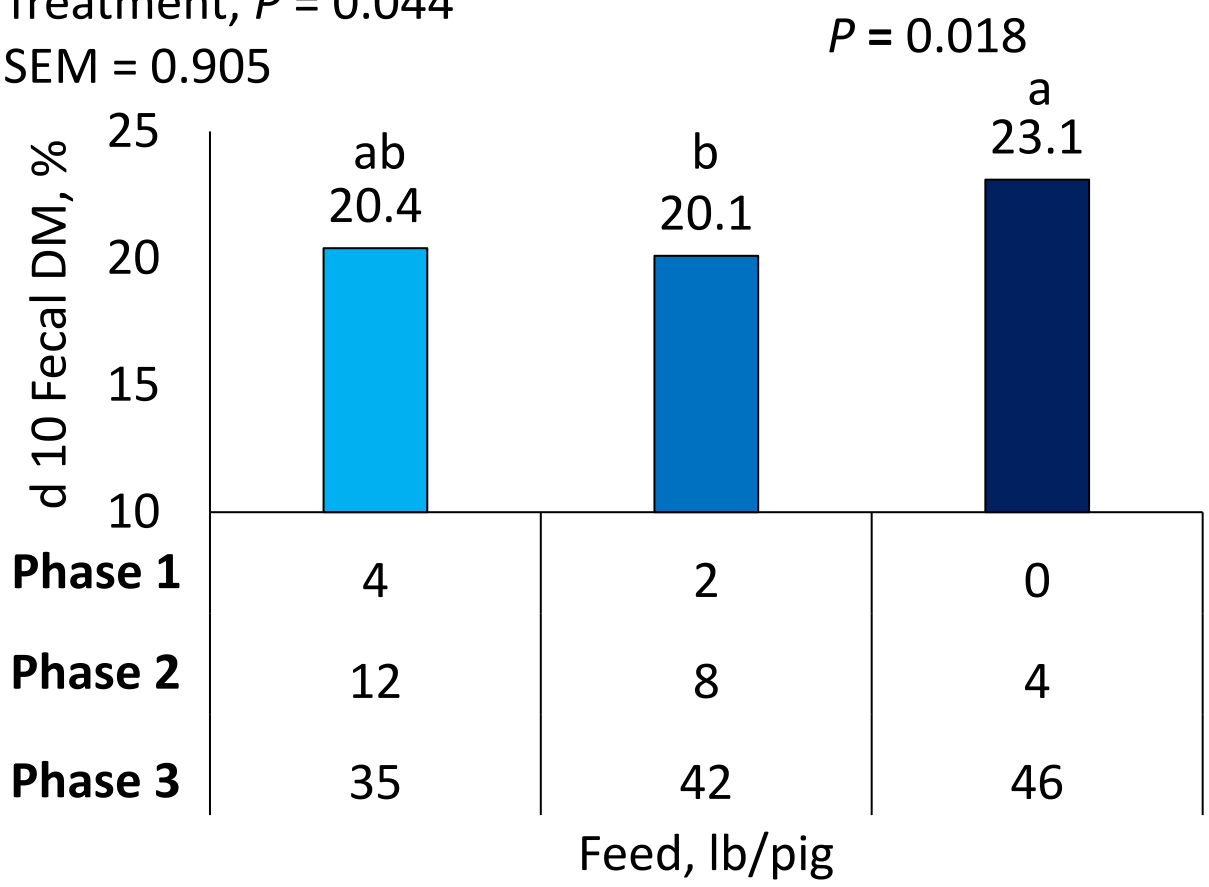
Arroyave et al., 2025

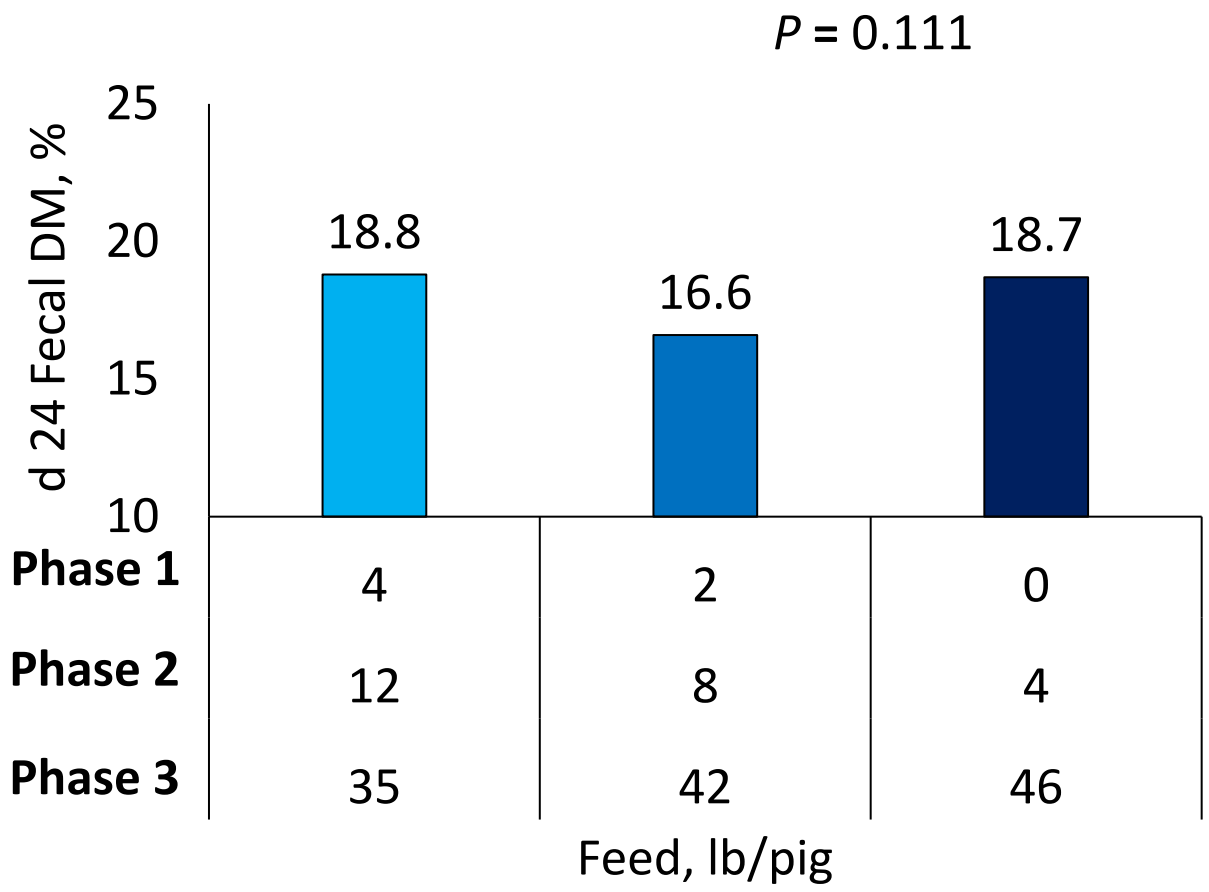
Economics

		Feed budget				
		High	Medium	Low		
	Phase 1, lb/pig	4	2	0		
	Phase 2, lb/pig	12	8	4		
Item, $	Phase 3, lb/pig	35	42	46	SEM	*P* =
Experiment 1						
Feed cost		8.12[a]	7.73[b]	7.19[c]	0.240	< 0.001
Feed cost/lb of gain		0.20[a]	0.19[b]	0.18[c]	0.001	< 0.001
Revenue		24.97	25.07	24.71	0.780	0.822
IOFC		16.85	17.34	17.51	0.547	0.301
Experiment 2						
Feed cost		10.76[a]	10.29[b]	9.77[c]	0.108	< 0.001
Feed cost/lb of gain		0.30[a]	0.21[b]	0.20[c]	0.002	< 0.001
Revenue		28.95	29.53	30.04	0.333	0.077
IOFC		18.20[a]	19.24[b]	20.27[c]	0.301	< 0.001

Day 10 and 24 Fecal DM, Exp. 1

Day, $P < 0.001$
Day x Budget, $P = 0.211$
Treatment, $P = 0.044$
SEM = 0.905





Arroyave et al., 2025

Validation- commercial conditions

	Feed budget		
	High	Medium	Low
Phase 1, lb/pig	4	2	--
Phase 2, lb/pig	12	8	4
Phase 3, lb/pig	Ad libitum		

- Two rooms (room 1: 8 pens/treatment; room 2: 7 pens/treatment)
- 26 pigs/pen
- Same diets as previous experiments
- Pellet

Partial results - d 0 to 33

Healthy barn

	Feed budget		
	High	Medium	Low
ADG, lb/d	0.92	0.91	0.91
ADFI, lb/d	1.16	1.14	1.13
F/G	1.26	1.26	1.24

Reduction in feed budgets doesn't impact the performance

Health challenge barn

	Feed budget		
	High	Medium	Low
ADG, lb/d	0.85	0.80	0.82
ADFI, lb/d	1.05	1.01	1.02
F/G	1.25	1.27	1.24

Respiratory, enteric, and strep challenges

The reduction of feed budgets results in a reduction of performance

Conclusions

- No interactions between BW and feed budget were observed.
- Reducing phase 1 and 2 budgets did not affect overall performance.
- Simple diets helped to improve fecal dry matter at d 10.
- The low budget treatment reduced feed cost/lb gain by 20%.
- Results under commercial conditions are consistent with the results obtained under university conditions

Thank you!

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