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Feed Budget and Milk Replacer Impact Post-Weaning Pig Performance

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Introduction

Many trials in the past have focused on evaluating the impact of diet complexity on nursery pig performance. When considering diet complexity, many have focused primarily on either level of dietary plasma or soybean meal. The results of these experiments have led to a general consensus that more complex diets are beneficial, but recommendations regarding duration of feeding of the complex diets has varied. A recently conducted trial suggested that duration of feeding of a complex diet immediately post-weaning could impact overall 49-d nursery weights by 0.72 – 1.8 kg/pig.

Milk replacer is well recognized as a means of improving pre-weaning pig performance. Milk replacer supplementation post-weaning is also implemented on a limited basis in the U. S. swine industry but is typically limited to the smallest pens of pigs. Data with heavier weaned pigs is limited.

The experiment presented in this report was designed to evaluate the duration of feeding of a complex diet, and milk replacer supplementation on pig performance the first 21-d post-weaning.

Materials and Methods

A total of 991 Line 442 X D100 (Compart's Boar Store, Nicollet, MN) barrows and gilts, approximately 21 days of age, were sorted by sex and initial weight to one of two feed budgets (Challenge or Commercial). Pigs fed the Challenge program received the Phase 1 diet for 7 days followed by the Phase 2 diet for 14 days. Pig fed the Commercial program were fed the Phase 1 diet for 5 days, the Phase 2 diet for 10 days, and then a simple corn-soybean meal based diet with the same nutrient profile (with the exception of lactose) of the Phase 2 diet for the remaining 6 days of the experiment. The heaviest 80% of the pens of the Challenge and Commercial pigs were also allotted to the milk replacer portion of the experiment. Pigs received either no milk replacer, or milk replacer (LitterGro, Merricks, Middleton, WI) for 5 days. All pigs had ad libitum access to feed from a 5-hole fenceline feeder and water from 2 nipples and 1 cup per pen. Pigs were housed at 24 – 25 pigs per pen with 0.24 – 0.25 m² per pig. Milk replacer was provided from 3 Snap-Waterers (Ag Alliance, Altoona, IA) per pen. Milk replacer was mixed twice daily.

Results

During the first 7 days post-weaning no difference in performance was detected between pigs fed the

Challenge and Commercial programs. From days 7 – 21, gain was greater ($P<0.001$) and feed conversion improved ($P<0.0001$) when pigs were fed the Challenge feeding program. Over the 21-d experiment, gain was improved ($P<0.001$) from 238 g/d to 279 g/d for pigs fed the Commercial vs. the Challenge feeding program. At the end of the 21-d experiment, the Challenge pigs were 0.86 kg/pig heavier ($P<0.001$) than the Commercial pigs.

Offering ad libitum access to milk replacer for 5-d post-weaning improved gain ($P<0.01$) from 121 g/d to 162 g/d. Consumption of dry pelleted diet by pigs offered milk replacer was approximately 50% of that of the pigs offered only the dry diet ($P<0.0001$). However, when consumption of the solids from the milk replacer were included as intake, intakes were similar ($P>0.10$) between treatments. During the subsequent 14-d period, no differences in pig performance were observed. When measured over the entire 21-d experiment, the improvement in gain observed from day 0 – 7 of 0.29 kg per pig, resulted in a 0.28 kg/pig advantage but this difference was not significant ($P>0.10$). Feed conversion tended to be improved ($P<0.10$) over the 21-d experiment when milk replacer was offered the first 5 days post-weaning even when the milk replacer as its intake was included in the feed conversion calculation.

No Feed Budget X Milk Replacer interaction was detected ($P>0.10$). During the first 7-d post-weaning milk replacer supplementation improved gain regardless of budgeting regimen. Milk replacer supplementation was not able to improve performance of the Commercial pigs to that achieved by the Challenge pigs from day 7 – 21 post-weaning.

Summary

Many veterinarians and nutritionist consider diet complexity as a separate issue from feed budgeting. However, in reality, they are very similar. The sooner pigs are transitioned off of an early diet, the sooner they begin receiving a diet with lower plasma, and higher soybean meal levels. These results indicate that the result of under budgeting early nursery diets, or changing to a simpler diet too early, may easily reduce gain by 0.86 kg/pig within 21-d post-weaning, and may increase the amount of feed required per unit of gain by 0.07 units.

In this experiment, supplementation of the weaned pig with milk replacer immediately post-weaning resulted in a 34% improvement in gain during the first 7-d and a 6%

improvement in feed conversion as measured over the entire 21-d experiment. These results suggest that milk replacer supplementation may be beneficial for heavier pigs immediately post-weaning.

N0211: Feed Budget Programs Comparison, Experiment 1
Location: PPI

	Challenge	Commercial	CV	P <
Pens	20	20	-	-
Total no. of pigs	496	495	-	-
Starting weight, g	6360.8	6396.3	14.77	.91
d 0-7				
ADG, g	135.6	130.9	33.5	.74
ADFI, g	102.2	97.0	36.2	.65
GF	1.61	1.65	62.4	.90
End weight, g	7309.8	7312.6	14.1	.99
Gain, g	949.0	916.3	33.5	.74
Deaths & Culls	0	0	-	-
d 7-21				
ADG, g	351.6	291.9	14.6	.0003
ADFI, g	393.4	357.6	12.5	.02
GF	.89	.81	6.2	.0001
End weight, g	12231.8	11399.7	13.2	.10
Gain, g	4922.1	4087.1	14.6	.0003
Deaths & Culls	12	4	-	-
d 0-21				
ADG, g	279.6	238.3	14.0	.0009
ADFI, g	295.6	270.4	12.8	.03
GF	.95	.88	10.1	.02
Gain, g	5871.0	5003.4	14.0	.0009

N0211: Milk Replacer in Starter Diets, Experiment 2
Location: PPI

	No Milk	Milk	CV	P <
Pens	16	16	-	-
Total no. of pigs	396	396	-	-
Starting weight, g	6646.0	6681.9	12.8	.91
d 0-7				
ADG, g	121.0	162.7	27.9	.006
ADFI, g	125.7	65.0	21.3	.0001
GF	1.00	2.65/1.14 ¹	34.6/35.3 ¹	.0001/.31 ¹
End weight, g	7493.1	7820.7	10.9	.28
Gain, g	847.1	1138.8	27.9	.006
Deaths & Culls	0	0	-	-
d 7-21				
ADG, g	330.9	330.0	13.9	.95
ADFI, g	391.2	379.8	11.7	.48
GF	.84	.87	6.4	.25
End weight, g	12125.6	12440.3	11.1	.52
Gain, g	4632.6	4619.6	13.9	.95
Deaths & Culls	14	2	-	-
d 0-21				
ADG, g	260.9	274.2	12.1	.25
ADFI, g	302.1	274.7	11.8	.03
GF	.86	1.00/.91 ¹	7.0/7.6 ¹	.0001/.06 ¹
Gain, g	5479.7	5758.4	12.1	.25