Creep Feeding in the Farrowing Room: Do the Outcomes Depend on Weaning Age?

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SUMMARY

Creep feed could benefit older weaned piglets by supplementing nutrients in sows' milk. Additionally, it could aid the transition to solid feed at weaning, perhaps more of a benefit to the younger weaned piglet. In our experiment, body weight at nursery exit was greater in piglets offered creep feed for one week prior to weaning, regardless of weaning age (3 vs 4 wk weaning). However, less than 4 % of the piglets weaned at 3 weeks of age showed evidence of creep feed consumption.

INTRODUCTION

Offering supplemental feed in the farrowing room (creep feeding) is thought to benefit piglets by 1) providing supplemental nutrition, 2) introducing piglets to solid feed prior to weaning and 3) adapting the gastrointestinal tract to nutrients not found in the sow's milk.

Figure 1. Configuration of the creep feeder used in the experiment

In 2010, however, we reported that providing creep feed for 7 days prior to weaning did not improve litter performance post-weaning and this was irrespective of piglet weaning weight (Beaulieu et al., 2010 Annual Report; Weaning at 28 days: Is creep feeding beneficial?). We followed this up with a study in which we tracked consumption of creep feed and phase one diet by individual piglets. This study demonstrated that, while only a small proportion of piglets consumed creep feed during the 7 days pre-weaning, those who did had improved growth performance throughout the nursery period (Beaulieu et al., 2011 Annual Report; Creep feed provision in the farrowing room provides benefits to piglets showing evidence of intake). The present study aims to expand on these findings by investigating whether the benefits of creep feeding depend on weaning age.

MATERIALS AND METHODS

This experiment consisted of 4 treatments in a 2×2 factorial arrangement. The factors were: provision, or not, of creep feed in the farrowing room and weaning at 3 or 4 weeks of age. For piglets assigned to receive it, creep feed was made continuously available in a multi-space creep feeder (Figure 1) for 7 days prior to weaning. Both the creep feed and the phase one nursery diet were marked with an inert food dye (Brilliant Blue and ferric oxide (red), respectively). Anal swabs taken from the piglets receiving creep feed 1 day prior to weaning and from all piglets 2 days post-weaning allowed us to relate post-weaning growth performance to consumption of creep feed and to explore whether consumption of creep feed pre-weaning encourages consumption of phase one diet immediately post-weaning.

RESULTS AND DISCUSSION

As expected, piglets weaned at 3 weeks weighed less at weaning than those weaned at 4 weeks ($P < 0.0001$; Table 1). This pattern persisted through the first 14 days post-weaning ($P < 0.0001$); however, by nursery exit (8 weeks of age, regardless of age at weaning) piglets weaned at 3 weeks were heavier than those weaned at 4 weeks ($P < 0.05$; Table 1).

The provision of creep feed in the farrowing room did not affect piglet body-weight at weaning and there were no creep feed by weaning age interactions ($P > 0.50$; Table 1). Growth ($P < 0.05$) and ADFI ($P < 0.0001$) of piglets who had been offered creep feed in the farrowing crate were greater than those who had not and piglets who had been offered creep feed in the farrowing room were heavier at nursery exit than piglets not offered creep feed ($P \leq 0.01$; Table 1).

Table 1: The effects of weaning age (3 versus 4 weeks) and the provision of creep feed in farrowing on the post-weaning growth performance of piglets[a]

Performance Parameter	Weaning Age		Creep Status		SEM	P-Values		
	3 weeks	4 weeks	Creep[b]	No Creep		Age	Creep	Age x Creep
n, litters	40	40	40	40				
n, piglets	435	442	430	447				
Body-Weight, kg								
Day -7[c]	3.79	5.24	4.56	4.47	0.12	<0.0001	0.55	0.66
At Weaning (Day 0)	5.51	6.96	6.33	6.13	0.13	<0.0001	0.26	0.78
Day 7 post-wean	6.15	7.87	7.18	6.84	0.14	<0.0001	0.07	0.68
Day 14 post-wean	7.81	9.92	9.15	8.59	0.18	<0.0001	0.03	0.50
Nursery Exit[d]	20.04	18.50	19.90	18.64	0.38	0.01	0.01	0.91
Average Daily Gain, kg								
7 d Pre-Wean	0.24	0.25	0.26	0.23	0.25	0.85	0.02	0.63
Day 0 to 7	0.09	0.13	0.12	0.10	0.01	0.001	0.03	0.06
Day 7 to 14	0.22	0.30	0.28	0.25	0.01	0.0002	0.01	0.29
Day 0 to Nursery Exit	0.40	0.40	0.42	0.38	0.01	0.61	0.01	0.65
Average Daily Feed Intake, kg								
Day 0 to 7	0.10	0.13	0.13	0.10	0.003	<0.0001	<0.0001	0.01
Day 7 to 14	0.26	0.33	0.31	0.28	0.005	<0.0001	<0.0001	0.0004
Day 0 to Nursery Exit	0.52	0.49	0.52	0.49	0.01	0.001	<0.0001	0.24
Gain:Feed, kg/kg								
Day 0 to 7	0.96	1.02	0.96	1.02	0.06	0.57	0.42	0.56
Day 7 to 14	0.89	0.88	0.90	0.88	0.03	0.79	0.66	0.49
Day 0 to Nursery Exit	0.78	0.81	0.80	0.79	0.01	0.17	0.63	0.81

[a] Data is presented as litter averages
[b] Includes data from all litters to which creep feed was offered, regardless of whether or not individual piglets showed evidence of creep feed consumption
[c] Creep feed was made available to those litters assigned to receive it for 7 days prior to weaning
[d] All piglets exited the nursery at 8 weeks of age, irrespective of whether they were weaned at 3 – or 4 weeks of age

In the 3 week weaning age group, only 8 piglets (4%) showed evidence of having consumed creep feed; whereas 73 four-week weaned piglets (34%) showed evidence of having consumed creep feed (Table 2). Creep feed disappeared at a rate of 57 g per litter per day for litters weaned at 3 weeks of age and 203 g per litter per day for litters weaned at 4 weeks of age ($P < 0.0001$).

Within the 3 week weaned piglets, creep-feed "eaters" were the lighter birth-weight piglets. Although these piglets had a greater rate of body-weight gain during the second week in the nursery, they were still lighter than the "non-eaters" at nursery exit (Table 2).

Piglets weaned at 4 weeks of age, identified as "eaters" of creep feed had greater rates of body-weight gain throughout the nursery phase than those identified as "non-eaters" of creep feed. Piglets who consumed creep feed in the farrowing crate were heavier, both at weaning and at nursery exit than those who did not (Table 2).

Within the 3 week weaning age group, 84 piglets (19%) showed evidence of having consumed phase one diet within the first 24 h post-weaning; whereas 142 (32%) of 4 week weaned piglets showed evidence of having consumed phase one diet within the first 24 h post-weaning.

Irrespective of creep feed status in the farrowing room, consumption of phase one diet within 24 h of weaning was associated with improved rates of BW gain during the first week in the nursery in both 3 and 4 week weaned piglets. In 4 week weaned piglets, this improvement in ADG persisted throughout the nursery period (0.42 vs. 0.38 kg/d for "eaters" and "non-eaters" of phase one, respectively), such that 4 week weaned piglets who consumed phase one diet within 24 h post-weaning were heavier at nursery exit than those who did not (19.01 vs. 18.07 kg, respectively).
Irrespective of creep feed status in the farrowing room, consumption of phase one diet within 24 h of weaning was associated with

Table 2: Effects of creep feed consumption[a] on the growth performance of piglets weaned at 3 – or 4 weeks of age

Growth Performance Parameter	Treatment					
	Weaned at 3 Weeks		Weaned at 4 Weeks		Main Effects of Creep	
	Creep Feed "Eater"	Creep Feed "Non-Eater"	Creep Feed "Eater"	Creep Feed "Non-Eater"	Creep Feed "Eater"	Creep Feed "Non-Eater"
n, piglets	8	206	73	143	81	349
Body-Weight, kg						
Birth	1.51	1.79	1.62	1.68	1.61	1.75
Day -7[b]	3.43	3.89	5.22	5.00	5.04	4.35
Day 0 (weaning)	5.11	5.66	7.02	6.74	6.83	6.10
Day 7	5.74	6.30	8.37	7.65	8.11	6.86
Day 14	7.64	7.94	10.88	9.70	10.56	8.66
Nursery Exit[c]	20.14	20.53	19.97	18.07	19.99	19.53
Average Daily Gain, kg						
Day -7 to 0	0.24	0.25	0.26	0.25	0.26	0.25
Day 0 to 7	0.09	0.09	0.19	0.13	0.18	0.11
Day 7 to 14	0.27	0.23	0.36	0.29	0.35	0.25
Day 0 to Exit	0.42	0.41	0.45	0.39	0.44	0.40
Average Daily Feed Intake kg						
Day 0 to 7	0.11	0.10	0.15	0.14	0.15	0.12
Day 7 to 14	0.26	0.26	0.38	0.36	0.36	0.30
Day 0 to Exit	0.53	0.52	0.52	0.51	0.52	0.52
Feed Conversion Efficiency, kg/kg						
Day 0 to 7	0.90	0.92	1.25	0.89	1.22	0.91
Day 7 to 14	1.05	0.89	0.94	0.80	0.95	0.85
Day 0 to Exit	0.79	0.79	0.85	0.76	0.85	0.78

[a] Data-set includes only those piglets to whom creep feed was offered. Data unbalanced and not analyzed statistically

[b] Creep feed was provided from day -7 to day 0 i.e. for the week prior to weaning

[c] All piglets exited the nursery at 8 weeks of age, irrespective of their age at weaning

improved rates of BW gain during the first week in the nursery in both 3 and 4 week weaned piglets. In 4 week weaned piglets, this improvement in ADG persisted throughout the nursery period (0.42 vs. 0.38 kg/d for "eaters" and "non-eaters" of phase one, respectively), such that 4 week weaned piglets who consumed phase one diet within 24 h post-weaning were heavier at nursery exit than those who did not (19.01 vs. 18.07 kg, respectively).

Regardless of age at weaning, piglets who consumed both creep feed in the farrowing crate and phase one diet within 24 h post-weaning were heavier and had greater rates of body-weight gain throughout the nursery period than any other group of piglets (Data not shown).

CONCLUSIONS

Creep feeding in the farrowing room improved the weaning and nursery exit weights of the piglets who actually consumed it. Although the benefits of creep feeding were similar in piglets weaned at 3 or 4 weeks of age, there was a dramatic difference in the number of piglets that consumed the offered creep feed. Further research into ways of encouraging creep feed consumption among piglets is required.

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