Creep feed source: What is effective and what do piglets prefer?

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SUMMARY

While creep feeding continues to be widely used in swine operations, the effectiveness of creep feeding to improve pre- and post-weaning performance up for debate. We conducted a study to determine whether provision of creep feed is beneficial and whether this is dependent on the type of creep feed provided. We also determined preference for type of creep feed in piglets. Overall, there was little impact of creep feeding on post-weaning performance and piglets or preference for type of diet (creep diet, lactation diet). While there does not seem to be a benefit to creep feeding, producers who choose to provide creep feed can use a less expensive diet.

INTRODUCTION

Creep feeding is a common practice in swine production, with approximately 90% of farms indicating that they provide creep feed. There are a number of perceived benefits including provision of nutrients, higher weaning weight, and improved transition at weaning, however the benefits of creep feed exist when pigs eat the feed. Intake of creep feed is usually low and highly variable among pigs with approximately 30-50% eating creep feed. It is generally higher in smaller piglets with little to no intake observed in larger piglets. The achieved benefit of creep feeding on growth performance in the suckling and/or nursery period remains inconsistent.

Other work has demonstrated the benefits of providing creep feed is related to enhancing exploratory behaviour in piglets (i.e., allowing natural rooting behaviours) and exposure to feed in a dry form than provision of nutrients. Therefore, it is possible that providing expensive creep diets is not necessary to achieve the benefits of creep feed on weaning weight and overall performance, and that simple diets such as a typical lactation diet, would be sufficient. Creep feed is the most expensive diet used in pig production, costing between $600-1800/tonne. Identification of less expensive alternatives would help to reduce production costs.

EXPERIMENTAL PROCEDURES

A total of 50 sows and litters (n=12-14 per treatment) were randomly assigned to one of four creep feeding treatments. Creep feeding protocols were: 1) no creep feed provided (CON), 2) complex creep feed provided (CC), 3) simple creep feed provided (SC), and 4) both complex and simple creep feed provided (SCC). The CC consisted of a standard nursery starter diet and the SC consisted of a standard lactation diet. Two feeders contained creep feed and were located in the front and back of the farrowing crate. For the SCC treatment, one feeder contained the simple creep and one contained the complex creep. The location of the creep type remained constant for each litter throughout the entire creep feeding period but varied across litters to reduce the effects of feeder location on intake of the two creep diets.

Litter weight was recorded weekly on day 7, 14, 21, and at weaning; mortalities were recorded and litter size was adjusted. At d 14 post-farrowing, litters were placed on their respective creep treatment. Piglets received fresh creep feed each day, with total feed provided and intake recorded on a daily basis and adjusted for wastage. At weaning, piglets were housed in pens of 10-13 pigs/pen (n=14-16 pens/treatment) within pre-weaning treatment groups. Individual pig body weight and per pen feed intake were recorded on a weekly basis for four weeks.

RESULTS AND DISCUSSION

Pre-weaning performance

The initial body weight of piglets on the Control and SC treatments was higher ($P < 0.05$) than other treatments but this difference was not evident at the onset of provision of creep feed ($P > 0.05$). There was no difference in litter performance prior to provision of creep feed ($P > 0.05$). There was no difference in ADG in the first week of creep provision; however, in the second week we saw an increase

in ADG in piglets receiving the SC treatment (P < 0.05) compared to Control and CC, with SCC being intermediate. There was a trend for improved overall ADG in litters receiving the SC and SCC creep treatments (P = 0.062). There was no difference in creep feed intake across treatments (P > 0.05).

Post-weaning performance

Pigs that received no creep feed pre-weaning had slightly reduced ADG (P < 0.05) in the first week post-weaning, with no differences among those pigs that received creep feed (P > 0.05). There was no difference (P > 0.05) in performance after the first week and no effect on ADG throughout the entire nursery period or on final body weight. Overall, there appears to be little benefit of provision of creep feed under the conditions of the current study.

While we did not observe a benefit in the current study, it is important to note that this is specific to the conditions of the study. Data presented are averages for litter or pen and does not account for potential positive effects of creep feed on individual piglets. Previous work has indicated there may be a benefit of providing creep feed, but only in those piglets that actually consume the creep feed.

Another factor to consider is while there may be no benefit on overall pig growth; we should consider other benefits not determined in this study. For example, more rapid onset of feeding and adjustment to intake of plant-based diets vs. milk may help to improve gut development and health, improving long-term robustness of the pig. Future work should attempt to determine the non-growth impact of provision of creep feed.

There also appears to be no preference for either simple or complex creep diets, with no difference in intake between the creep types in those litters receiving both diets (Figure 1). It is important to note that this is based on a small number of litters (N=12). However, based on overall creep intake in all litters, we did not see an impact of feeding creep feed.

Table 1. Pre-weaning performance 1,2

	Treatment					
Item	Control	SC	CC	SCC	SEM	P-value
n	14	14	12	12	12	
Birth weight, kg	1.52a	1.53a	1.45ab	1.43b	0.030	0.041
d 14 weight, kg	4.69	4.74	4.57	4.60	0.138	NS
Wean weight, kg	8.17	8.59	8.19	8.25	0.209	0.081
Average daily gain, kg/d						
d 0-7	0.180	0.187	0.181	0.187	0.010	NS
d 7-14	0.273	0.273	0.262	0.265	0.007	NS
d 0-14	0.219	0.223	0.216	0.220	0.008	NS
d 14-21	0.278	0.291	0.294	0.283	0.112	NS
d 21-28	0.221b	0.259a	0.223b	0.239ab	0.015	0.002
d 14-28	0.274	0.290	0.276	0.284	0.008	0.062
Creep consumed, g/pig/d						
d 14-21	-	6.02	4.14	6.68	1.41	NS
d 21-28	-	13.85	13.83	20.62	4.37	NS
d 14-28	-	9.88	9.04	13.62	2.55	NS

BW, body weight; CC, complex creep provided; Control, no creep feed provided; NS, not significant; SC, simple creep provided; SCC, both simple and complex creep provided; SEM, standard error of the mean, 1Values are least square means. Creep feed was offered to piglets from d 14 after birth until weaning

IMPLICATIONS

Overall, there appears to be little benefit of providing creep feed in general or of providing complex, expensive creep feed. Specifically:

- Piglets showed no preference for simple or complex creep feed.
- There was little impact of provision of creep feed on pre-weaning performance, with increased ADG only in the final week pre-weaning.
- While there was a slight benefit to providing creep feed on growth performance in the first week post-weaning, there was no benefit at the end of the nursery.

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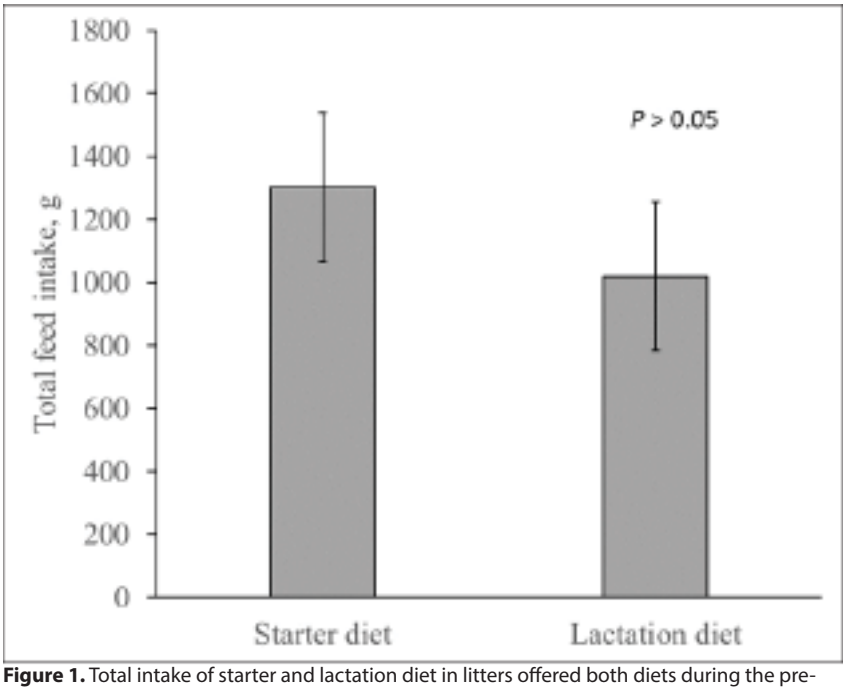

Figure 1. Total intake of starter and lactation diet in litters offered both diets during the pre-weaning period. Values are least square means +/- SEM.

Table 3. Nursery Performance

	Treatment					
Item	**Control**	**SC**	**CC**	**SCC**	**SEM**	**P-value**
n	14	16	15	14		
Initial BW, kg	8.14	8.19	8.13	8.08	0.283	NS
Final BW, kg	21.60	21.91	21.99	22.15	0.445	NS
Average daily gain, kg/d						
d 0-7	0.163b	0.181ab	0.209a	0.192a	0.015	< 0.05
d 7-14	0.446	0.454	0.452	0.453	0.047	NS
d 14-21	0.584	0.588	0.604	0.621	0.040	NS
d 21-28	0.723	0.731	0.721	0.742	0.020	NS
d 0-28	0.480	0.496	0.489	0.502	0.124	NS
Average daily feed intake, kg/d						
d 0-7	0.163	0.172	0.185	0.176	0.010	NS
d 7-14	0.468	0.466	0.488	0.490	0.022	NS
d 14-21	0.732	0.725	0.744	0.772	0.034	NS
d 21-28	0.970	0.971	0.978	1.002	0.034	NS
d 0-28	0.584	0.583	0.599	0.610	0.017	NS
Gain:Feed, kg/kg						
d 0-7	0.985	1.048	1.099	1.087	0.046	NS
d 7-14	0.935	0.971	0.919	0.931	0.078	NS
d 14-21	0.803	0.802	0.817	0.797	0.035	NS
d 21-28	0.754	0.751	0.742	0.731	0.018	NS
d 0-28	0.867	0.823	0.852	0.825	0.031	NS

BW, body weight; CC, complex creep provided; Control, no creep feed provided; NS, not significant; SC, simple creep provided; SCC, both simple and complex creep provided; SEM, standard error of the mean, 1Values are least square means.