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Abstract

A total of 239 sows (PIC C-22) were used in this experiment. Sows were randomly allotted to one of the two experimental treatments approximately 5 days before their expected farrowing date. Control sows did not receive any topdress; sows on the WEANMOR+Â® treatment received a single daily topdress of 25 g of WEANMOR+Â®. Topdressing the sow feed with WEANMOR+Â® reduced (P<0.06) urine pH, but number of total pigs born, mummied, fostered, died, or weaned were not influenced by treatment (P>0.67). There was a parity group-by-stillborn interaction (P<0.10) in which feeding WEANMOR+Â® reduced the number of stillborn pigs in the parity 2 to 5 sows, with a numeric increase in stillborns when WEANMOR+Â® was fed to sows that were parity 6 and over.; Swine Day, 2005, Kansas State University, Manhattan, KS, 2005

Keywords

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INFLUENCE OF FEEDING WEANMOR+® TO SOWS ON STILLBORN RATE AND PREWEANING MORTALITY[1]

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Summary

A total of 239 sows (PIC C-22) were used in this experiment. Sows were randomly allotted to one of the two experimental treatments approximately 5 days before their expected farrowing date. Control sows did not receive any topdress; sows on the WEANMOR+® treatment received a single daily topdress of 25 g of WEANMOR+®. Topdressing the sow feed with WEANMOR+® reduced ($P<0.06$) urine pH, but number of total pigs born, mummied, fostered, died, or weaned were not influenced by treatment ($P>0.67$). There was a parity group-by-stillborn interaction ($P<0.10$) in which feeding WEANMOR+® reduced the number of stillborn pigs in the parity 2 to 5 sows, with a numeric increase in stillborns when WEANMOR+® was fed to sows that were parity 6 and over.

(Key Words: Sows, Litter Size, Diet Acidification.)

Introduction

WEANMOR+® is a product produced by Soda Feed Ingredients. It is a microencapsulated, dry calcium chloride product. The chloride ions are thought to improve the cation/anion balance and lower the pH in the GI tract and urine. Because pH decreases, development of bacteria in the GI tract is also changed, which may reduce preweaning mortality. In addition, because calcium is required for muscle contraction during farrowing, the extra calcium provided by WEANMORE+® may help with muscle contractions. We conducted a previous experiment providing limestone as a topdress and found no difference in stillbirths, but the change in calcium source and incorporation in a protected product may alter the response. Topdressing WEANMOR+® reduced stillbirths in a previous experiment and increased milk yield when fed at .4% of the complete diet in another experiment. Therefore, the objective of this trial was to determine whether feeding WEANMOR+® to sows immediately before farrowing and during lactation reduces stillbirths and preweaning mortality.

Procedures

A total of 239 sows (PIC C-22) were used in this experiment. Sows were randomly allotted to one of the two experimental treatments approximately 5 days before their expected farrowing date. Control sows did not receive any topdress. Sows on the WEANMOR+®

[1]Appreciation is expressed to Rod and Ellen Evert and the other employees at Zenith Project, Genesco, Kansas, for data collection, and to Dr. Lisa Tokach from Kansas Swine Alliance for assistance in experimental design and data collection. Appreciation also is expressed to Soda Feed Ingredients for partial financial support of the experiment.

[2]Food Animal Health & Management Center, College of Veterinary Medicine.

treatment received a single daily topdress of 25 g of WEANMOR+®. Before sows were moved to the farrowing house, the WEANMOR+® was added on top of the gestation diet. After sows were moved to the farrowing house, the WEANMOR+® was added on top of the lactation diet. The goal was to feed the WEANMOR+® for 4 to 5 days before parturition.

Sow farrowing cards were marked with the treatment (C for control or T for topdress). When entered into PigChamp, the C or T was recorded as a flag for each individual sow, followed by the day of initial treatment. The date that sows were moved into the farrowing house was marked on the sow card and entered into PigChamp. Because preweaning mortality was an important criterion in the experiment, cross-fostering was only done within treatment. If foster sows were created, they received pigs only from one treatment.

Response criteria were total born, stillborn, mummies, whether or not the sow required assistance during farrowing, and preweaning mortality. Litter weaning weight also was measured. Urine samples were collected on a subsample of 40 sows (approximately 20 sows per treatment), and urine pH was measured immediately with a portable pH meter. Urine was collected within 24 hours after sows completed farrowing.

Because classification of a pig as stillborn versus a pig that was born alive and died shortly after birth was very important, standard definitions were used. A stillborn was defined as a piglet that was alive at the initiation of farrowing, but died intrapartum. Piglets showing autolytic changes were classified as mummies. Piglets that seemed full-term, but may have died postpartum, were counted in preweaning mortality rates. A fully formed pig that had no signs of having breathed air was classified as a stillborn. Mummies were defined as fetuses that die after the onset of skeletal calcification (30 to 40 days of gestation), but before initiation of parturition. These typically are the inspissated remains of fetal tissues after the maternal uterus has removed bodily fluids, leaving only the non-absorbable parts.

Data were analyzed by using the Proc Mixed procedures of SAS. Room and parity group (parity 1, parity 2 to 5, or parity 6 to 10) were used as covariates in the analysis. The small number of animals in some parity subgroups prevented the use of parity alone as a covariate. Therefore, sows were divided into three groupings to attempt to account for the increased stillbirths that normally occur in high-parity sows and small number of stillbirths in first-parity sows. To further investigate the data, a potential parity group-by-treatment interaction for stillbirths was also explored in a subsequent analysis.

Results and Discussion

Topdressing the sow feed with WEANMOR+® reduced ($P<0.06$) urine pH as expected (Table 1). Number of total pigs born, mummied, fostered, died, or weaned were not influenced by treatment (Table 2). The number of stillborn pigs was numerically fewer for sows topdressed with WEANMOR+®, but the differences were not significant. If the standard deviation from stillbirth number in this data set (1.44) is used, the calculated sample size for the 0.18 pig-per-litter reduction in stillbirths would be approximately 1,600 sows per treatment. Weaning weight also was not influenced by WEANMOR+®.

Because parity group was used as a covariate, we investigated whether the number of stillborn pigs was influenced by parity group (Table 3). There was a parity group-by-stillborn interaction ($P<0.10$) in which feeding WEANMOR+® reduced the number of stillborn pigs in the parity 2 to 5 sows, with a numeric increase in stillborns when WEANMOR+® was fed to sows that were parity 6 and over.

Even though relatively few pigs from the experiment were fostered onto nurse sows, we believed it was important to provide a full accounting of the fate of these pigs that were fostered off of sows on the experimental treatments. There unfortunately were not enough fostered pigs to allow for statistical analysis, and we were not able to attribute their data back to the source litter for statistical analysis as part of the source litter. Therefore, we have provided the raw data for the total number of pigs fostered, those that were fostered and lived, and the calculation of number of pigs produced per sow farrowed (Table 4). This calculation indicates that topdressing with WEANMOR+® numerically increased the number of pigs weaned per sow farrowed by 0.29 pigs. If the standard deviation of number weaned per sow from this data set (1.39) is used, the calculated sample size to find a difference of 0.29 pigs would be approximately 600 sows per treatment. Thus, the difference would not have been significantly different in this experiment.

In conclusion, topdressing the feed with WEANMOR+® from 5 days before farrowing until weaning did not influence sow productivity in this experiment. But this product was effective in lowering urine pH, and the stillbirth interaction between parity group and treatment, which indicated a potential benefit in parity 2 to 5 sows, warrants further investigation.

Table 1. Influence of WEANMOR+® on Sow Urine pH

Item	Control	WEANMOR+®	SE	P <
Number of sows	18	22		
Average urine pH	6.75	6.28	.18	0.06

Sows received WEANMOR+® for an average of 5.7 days before collection of urine.

Table 2. Influence of WEANMOR+® on Sow and Litter Performance

Item	Control	WEANMOR+®	SE	P <
Number of sows	118	121		
Average parity	4.5	4.3		
Total born, n	13.3	13.2	0.32	0.78
Stillborn, n	1.25	1.08	0.29	0.35
Mummies, n	0.60	0.58	0.17	0.82
Net fosters, n	-0.68	-0.83	0.31	0.67
Pigs died, n	1.46	1.43	0.15	0.89
Number weaned	9.23	9.19	0.13	0.81
Weaning weight, lb	127.5	127.4	3.00	0.97
Lactation length	19.1	19.4	0.37	0.39
Days on Weanmor+® before farrowing	5.11	5.11	0.62	0.97

Table 3. Influence of WEANMOR+® on Litter Stillborn Rate

Item	Control	WEANMOR+®	SE
Number of sows			
Parity 1	8	9	
Parity 2 to 5	72	78	
Parity 6 to 10	38	33	
Stillborn, n[a]			
Parity 1	0.57	0.61	0.50
Parity 2 to 5	1.37	0.91	0.18
Parity 5 to 10	1.42	1.82	0.25

[a]Interaction P< 0.10; parity group P < 0.01; treatment P < 0.98.

Table 4. Influence of WEANMOR+® on Number of Pigs Produced

Item	Control	WEANMOR+®
Total pigs fostered off	81	103
Fostered pigs that lived and were weaned	52	93
Total pigs weaned from original sows	1090	1113
Total pigs produced (foster and weaned)	1142	1206
Pigs produced per litter farrowed	9.68	9.97
Difference	---	0.29