AKEY

SWINE NEWSLETTER

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Akey's Field Trial Experience with L-Carnitine Supplementation of Sow Diets

Introduction: L-carnitine is a B-vitamin-like compound that in university trials has been shown to improve litter size in sows. Akey conducted three field trials to test the efficacy of L-carnitine in sow diets under commercial conditions.

Field Trial 1: Two similar sow farms within the same production system were used to evaluate the efficacy of L-carnitine for improving sow and litter performance. The sows in the units were of the same genotype (PIC), had similar average parity and parity distribution, and were very close in productivity levels in the pretest period (Table 1). One unit was fed control diets (0-ppm carnitine in gestation and lactation), while the other unit was fed the control diets plus L-Carnitine (50-ppm carnitine in gestation and lactation). Treatments were initiated during lactation and continued through breeding and the subsequent gestation (loading period) and lactation (test period). Thus, the data are divided into three periods (pretest, loading and test), with each period lasting 10, 19 and 10 wk, respectively (Table 1). All litters were standardized within dietary treatment by 48-h post-farrowing. Sows were fed to condition in breeding and gestation as per standard farm procedures. Sows were fed ad libitum throughout lactation.

Feed samples were collected periodically and submitted for carnitine analysis. Test results showed the control and treatment diets contained an average of <0.5 and 48 ppm L-carnitine, respectively.

The GLM procedure of SAS (1996) was used to determine L-carnitine effects on pigs born total, pigs born alive, stillborn pigs and litter weaning wt. For sows, the impact of L-carnitine was evaluated on 30-d conception rate (CR).

During the test period, prior feeding of L-carnitine had no effect on sow or litter performance (Table 1).

Table 1. Sow and Litter Performance During Field Trial 1

	Pretest Period		Loading Period		**Test Period**	
Item	Control	Carnitine	Control	Carnitine	**Control**	**Carnitine**
Farrowings, no	1229	1279	2472	2522	**1165**	**1218**
Pigs/litter, no						
Total	11.66	11.58	11.49	11.46	**11.59**	**11.34**
Live	10.74	10.69	10.66	10.56	**10.62**	**10.29**
Stillborn	0.93	0.89	0.83	0.90	**0.96**	**0.99**
Wean wt, lb/pig	12.14	12.75	12.99	12.61	**13.38**	**13.28**
30-d CR, %	83.0	86.9	81.8	81.6	**84.0**	**84.1**

Field Trial 2: Two 1,500-sow units owned by the same producer were used to evaluate the efficacy of feeding L-carnitine to sows to improve litter size. Sows were of a PIC genotype. Carnitine was fed in both sow herds. Carnitine feeding was initiated in both lactation and gestation diets and fed for 19

wks. Litter size was compared during the pretest (0-ppm carnitine) vs. test (50-ppm carnitine) period. Performance was not compared during the 19-wk loading period.

Sows were fed to condition in breeding and gestation as per standard farm procedures. Sows were fed ad libitum throughout lactation.

Feeding carnitine to sows in lactation, breeding and gestation had no impact on pigs/litter at the subsequent farrowing (Table 2).

Table 2. Litter Performance During Field Trial 2

Item	Pretest	**Test***
Farrowings, no.	5955	**1261**
Pigs/litter, no.		
Total	11.08	**11.19**
Live	10.21	**10.18**

*Sows were fed 50-ppm L-carnitine for 19-wk prior to data collection in the test period.

Field Trial 3: A 1,500-sow unit was used to evaluate the efficacy of L-carnitine supplementation of gestation and lactation diets to improve litter size. Sows were of a Newsham genotype. Carnitine feeding was initiated in both lactation and gestation diets and fed for 19 wks. Litter size was compared during the pretest (0-ppm carnitine) vs. test (50-ppm carnitine) period. Performance was not compared during the 19 wk loading period. Sows were fed to condition in breeding and gestation as per standard farm procedures. Sows were fed ad libitum throughout lactation.

Feeding L-carnitine to sows had no impact on pigs/litter at the subsequent farrowing (Table 3).

Table 3. Litter Performance During Field Trial 3

Item	Pretest	**Test***
Farrowings, no.	2032	**969**
Pigs/litter, no.		
Total	11.10	**11.00**
Live	10.20	**10.00**

*Sows were fed 50-ppm L-carnitine for 19-wk prior to data collection in the test period.

Summary: Akey field trial results do not support use of L-carnitine to improve reproductive performance of sows. Feeding 50-ppm carnitine for 19-wk pre-farrowing did not increase pigs born total or live per litter, piglet weaning wt or conception rate of sows.

At $4.30/ton of complete feed, supplementation of sow diets with 50-ppm carnitine is not justified based on these data.

Many thanks are expressed to Lonza for donating the Carniking 10% used in these field trials.

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