

## *Akey's Field Trial Experience with L-Carnitine Supplementation of Boar Diets*

**Introduction:** L-carnitine is a B-vitamin-like compound that, in European studies, has been shown to improve reproductive performance of boars used for artificial insemination. Akey recently conducted a field trial with L-carnitine to determine its effect on performance of boars housed in a commercial stud.

**Design:** A commercial boar stud was used for this trial. Boars were of a modern, high lean growth genotype. A total of 180 boars were placed on test. To assign treatments, boars were ranked from lowest to highest in terms of semen (dose) output for a 5 wk pretrial period. Boars were then grouped three to a replicate based on prior output and, within replicate, assigned randomly to one of three L-carnitine levels: None, Low, or High. L-carnitine was supplied as a top dress to the control diet, which was formulated as a complete feed with Akey Boar Plus™. Boars were fed 5 to 7 lb/d depending on body condition and physical activity. Boars were allowed a 7 wk adjustment period to allow adequate time for the L-carnitine to affect spermatogenesis. After the 7 wk adjustment period, boars were fed their respective treatments for a 9 wk test period during which data were collected for analysis. Weekly data within individual boars were averaged so that output per week could be compared among treatments.

**Results:** Feeding high levels of L-carnitine to boars increased semen volume, the number of viable sperm cells produced, and resulting dose output (Table 1).

**Table 1. Performance of Boars Fed Diets Top-Dressed with L-Carnitine <sup>a</sup>**

Item	Carnitine Level			P Value
	None	Low	High	
Motility, %	82.0	82.7	82.6	0.30
Normal, %	77.5	77.5	78.9	0.18
<b>Volume, ml/boar/wk</b>	<b>161.9</b>	<b>173.4</b>	<b>164.8</b>	<b>0.01</b>
Viability score	66.2	64.7	66.2	0.53
<b>Billions viable per wk</b>	<b>70.9</b>	<b>72.5</b>	<b>76.8</b>	<b>0.05</b>
<b>Doses, no./boar/wk</b>	<b>23.6</b>	<b>24.0</b>	<b>25.7</b>	<b>0.03</b>

<sup>a</sup>Trial conducted at a commercial boar stud.

**Conclusions:** An extra 2 doses of semen produced per boar per wk would result in ~100 extra doses/boar annually. At \$4.00/dose, the benefit to cost ratio of adding L-carnitine to the boar diet is ~20:1. Based on the results of this trial, Akey is updating Boar Plus to include a high level of L-carnitine supplementation. Boar Plus should be top-dressed at 6 oz per boar per day to ensure optimal semen production.

*Many thanks are expressed to algroup Lonza for donating the Carniking™ used in this trial.*