

Product Update: Use of Chromax[®] in Sow Feeds

Chromium (Cr) picolinate was approved for use in swine feeds in 1996. In 1995, two small studies were reported from Virginia Polytechnic Institute, indicating an increase in litter size in response to Cr picolinate supplementation of sow feeds. Additional research conducted at Bunge Meats Industries Ltd. of Australia (1995-96) showed beneficial but variable responses to Cr picolinate supplementation of sow diets in terms of litter size and farrowing rate. Chromax[®] is the only source of Cr picolinate approved for use in swine in the US. It is distributed by Prince Agri Products, and is used at a maximum of 200 ppb in swine feeds.

Recently, a large field trial was completed evaluating Cr picolinate (Chromax[®]) in sow diets. A total of 48,000 sows with 12 months of performance data are represented in this trial. Procedures and results are summarized below.

Procedures. Researchers used twelve 4,000-sow units under the same management, with similar facilities, located in the same geographic proximity and supplied by the same feed mill. The sows were a PIC genotype. The twelve units were ranked based on litter size records for a three-month period prior to initiating the study. Each similarly ranked farm pair was fed diets with or without Cr, resulting in six 4,000 sow units fed Cr at 200 ppb compared to six herds that received no supplemental Cr. Chromium from Chromax[®] was fed in gestation, lactation, and breeding diets. Replacement gilts for the Cr-fed herds only were fed 200 ppb Cr beginning at 150 lb body weight. Weaning age of pigs for all units was 16 to 17 days.

Chromium feeding began in September 1996 and continued through March 1998. The initial six months (September 1996 to March 1997) was used as a loading period for Cr in the Cr treated sow units prior to the trial comparison period from April 1997 through March 1998 (12 months of test data).

Pretrial Productivity. During the three month ranking period before Cr feeding began, the following performance criteria were not significantly different between the six herd group averages for the 0 and 200 ppb Cr treatments: total pigs born per litter (11.4 and 11.3), pigs born alive per litter (10.4 and 10.4), sow death rate (8.7% and 7.3%), and farrowing rate (84.2% and 86.3%).

During the immediate six month loading period when the Cr feeding began but prior to the actual data collection period, the following performance criteria were not significantly different between the two treatment groups: total pigs born (11.5 and 11.4), pigs born alive (10.3 and 10.3), sow death loss (7.9% and 7.3%), and farrowing rate (81.8% and 78.5%).

Results. Sow herd performance responses to Cr supplementation for the 12-month period of April 1997 through March 1998 are shown in Table 1.

Table 1. Effect of Chromax[®] on Sow Performance*

Response criteria	Chromax [®] level, ppb		Probability level
	0	200	
Adj. farrowing rate, %	80.0	79.9	
Wean to service, days	6.4	5.9	
Sows bred by day 7, %	87.8	90.6	0.08
Total pigs born/litter, no.	11.40	11.62	0.13
Pigs born alive/litter, no.	10.05	10.42	0.02
Adj. pigs born alive/litter*	10.06	10.44	0.02
Sow death rate, %	10.95	9.38	0.09

*Adjusted by omitting monthly data for sow units having more than 117 abortions during a PRRS outbreak.

Herds fed Cr picolinate had larger litters (increase of 0.22 pigs born total and 0.37 pigs born alive) and a higher percentage of sows bred back by day 7 postweaning (2.8%).

Conclusions. The use of Chromax[®] for sows remains debatable. The results of this large, long-term field trial demonstrate its potential beneficial effects and substantial payback. Other on-farm experience with Chromax[®] feeding has not always shown conclusive, positive results. Table 2 shows results from Akey field trials in two sow herds. In both herds, Cr picolinate was added at 200 ppb. No significant responses to Chromax[®] were detected in either herd, although in Farm 1, there were 0.18 more total pigs born per litter when sows were fed Cr. variables such as existing Cr status of the herd, time fed Cr prior to measuring responses, health status, feeding rate, body condition, and parity likely influence response to Cr supplementation. The difficulty, therefore, is the lack of a high degree of predictability for a positive response.

Table 2. Akey Field Trial Evaluating Chromax[®] for Sows

Chromax [®] level:	Farm 1		Farm 2		P value
	0	200	0	200	
Farrowings, no.	2600	2621	2577	2591	NS
Farrowing rate, %	86.8	84.8	86.0	84.2	NS
Total pigs born/litter, no.	11.58	11.76	11.54	11.53	NS
Pigs born alive/litter, no.	10.32	10.39	10.23	10.23	NS

Trial completed fall 1997. NS = Not Significant.

Without any response (particularly on litter size born), the increased cost per sow per year due to Cr feeding is substantial. The potential economic return, however, and the rather small impact needed on the number of pigs born per litter or per sow annually provide significant opportunity and warrants its use. This must be a farm- or herd-specific decision. If implemented, conclusions as to its effect require at least two complete reproductive cycles, and accurate records are necessary to evaluate these reproductive responses. As a general recommendation, Cr picolinate supplementation of gilt developer and sow feeds should be seriously considered in herds with less than 11 pigs born alive per litter.