The effect of supplemental dietary taurine upon performance of sows and their progeny.


Groups of 24 sows were used to study the effect of 0.5% supplemental dietary taurine on sow performance. Sows received 3.5 kg/d of a 13% CP diet containing and had ad libitum access to a 5% CP diet during lactation. Sows supplemented with taurine (T) received the same diets except for the addition of 0.5% supplemental taurine. Taurine supplementation began on day 107 of gestation and continued through day 21. Sows fed diets (14.3 vs. 10.0 kg, P < .05), but were not different in lactation backfat loss. Lactation feed intake in study 2 was significantly lower (9 vs. 11.1 kg, P < .01) for sows fed the control diet. A total of 144 pigs (progeny of 1 study) sows were used at 21d and allotted to a starter trial in a 2 factorial arrangement (T or C, sows and T or C, sows and lactation). Supplemental lactose served as the control (C) diet. A taurine (T) diet was identical to C except for the addition of 0.5% taurine. Both diets were included in either starter diet. There was no improvement in daily gain or feed efficiency due to taurine supplementation before starter diets were used on farms where T had improved feed efficiency (.81 vs. 67 G/F, P < .10) and a nonsignificant trend toward increased daily gains (190 vs. 185 g) during the first week of age. In conclusion, taurine failed to improve pig performance when supplemented in nurseries diets, but urine supplementation of lactation diets tended to improve post-weaning performance of pigs, and merits further investigation.

Key Words: Sows, Gestation, Dietary taurine


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High concentration of riboflavin in utero flushings of gilts early pregnancy suggests a short-term high riboflavin requirement, and provides a basis for lactation diet of riboflavin that time has been suggested to improve farrowing and litter to. Two studies of the response of sows to very high dietary riboflavin levels were performed. Preliminary studies examined the effect of 13.5 (mg/ke); LB) on high (52.8 mg/kg; LR) dietary riboflavin concentrations on a variety of indicators of riboflavin intake. Xanthine glutaminase activity (ECOD), of these groups throughout the reproductive cycle. Diets were fed during the first week of lactation. Diet utilized by all groups was a 16.8% diet of 133% mix. A few values for sows fed LB. The highest ECOD (1.33%) of sows on a 16% diet in mid-lactation. EGR of LR sows at 16.14 were 1.45. Corresponding ECOD for LB sows 1.16 d 1.24, respectively. Experiment 2 evaluated the effect of 4 mg of dietary riboflavin (10.40, 110, or 160 mg/day) during a first 21 d postweaning. A total of 113 mixed-ability crossbred gilts were used in 2 farrowing groups for each of 2 farms. The survival rate was higher (P < .10) on the 3 high levels of riboflavin on a 10% or 15% level. There were no effects (P > .10) of riboflavin intake litter size, sow weight change or any other measure of productive performance. Significant effects of riboflavin on lactation, on day 50 or 100 of pregnancy, or in mid-lactation. These results suggest that gilts are not unusually susceptible to riboflavin deficiency. Effects of riboflavin intake on reproduction at that time do not increase litter size. However, high riboflavin intake (60 to 160 mg/day) during early pregnancy may increase farrowing.

Key Words: Riboflavin, Sows, Reproduction

The effect of heat stress and dietary energy on embryo survival and gilt performance from days 3 to 24 postpartum. C. W. Liao and I. L. Veum, University of Missouri, Columbia.

A total of 72 breeder sows were used in three trials, 24 sows per trial, to study the effect of dietary energy and constant heat stress on embryo survival and gilt performance. Gilts were bred by artificial insemination using pooled semen and brought into the environmental chambers on d 3 postpartum without any adjustment period. Experiments 1 and 2 were conducted with the treatments with two constant temperatures, thermoneutral at 23±1°C or heat stress at 32±2°C; and two dietary ME intakes, 5.40 or 8.10 Mcal of ME per gilt daily. Gilts were coaxed through to a daily nutrient intake for each gilt except for ME intake. Diet intake was 1.60 kg/d for gilts fed 5.40 Mcal ME/d. The 8.10 Mcal ME diet was made by adding 0.35 kg of fat to the 5.40 Mcal ME diet. Gilts were fed once a day at 0800. Water was supplied ad libitum. At day 24 postpartum, the gilts were slaughtered. Ovaries and reproductive tracts were collected. The number of corpora lutea and live embryos, and embryo length and weight were determined. Embryo survival was calculated as the ratio of the number of live embryos compared to the number of corpora lutea. Average daily gain, backfat thickness and dressing percent were determined. Trials were pooled and the data were analyzed by ANOVA with a factorial arrangement of the treatments. There were no interactions (P > .05) between dietary energy and temperature for any of the criteria measured. Heat stress did not affect (P > .05) embryo survival. Average daily gain was lower for gilts fed the low energy diet (P < .05), subject to heat stress (P < .05). Gilts housed in the hot chamber had a smaller number of corpora lutea (P < .05) and live embryos (9.9 vs. 11.9, P < .05) and a lower percent of embryo survival (71.6 vs. 91.3, P < .05) than gilts housed in the thermoneutral chamber. These results taken together, these results suggest that heat stress had a detrimental effect on embryo survival while dietary energy did not affect embryo survival during early pregnancy.

Key Words: Br Ed. Gilts, Heat Stress, Embryo Survival

The interrelationships between dietary lysine and litter size on sow and litter performance. J. L. Laurie, J. L. Nelsen, R. D. Goodband, and M. D. Tokach, Kansas State University, Manhattan.

One-hundred ninety-three primiparous sows were used in a study with the objective to determine the influence of four litter sizes on the dietary lysine requirement of lactating sows as it relates to sow performance and sow weight loss. Gilts were assigned to one of three corn-soybean meal diets (67, 94, and 122% lysine) and standardized to one of four litter sizes (8, 9, 10, or 11 pigs). Sows were fed 3.5, 4.5, and 5.5 kg/d of their respective diets from d 0 to 7, 7 to 14, and 14 to 21 of lactation. This study was conducted over four trials (24, 31, 38, and 42 pigs, 31, 38, and 42 pigs, respectively) during d 0 to 7, 7 to 14, and 14 to 21, respectively. Ratios of all other essential amino acids were kept constant to ensure lysine was first limiting. All diets contained 5% soybean oil. Sows were fed twice daily and feed intake was recorded each day. Litters were adjusted to their treatment size within 72 h after farrowing. If a pig died during the last period of a pig a similar weight and weight was used a replacement. Sows and litters were weighed weekly and average backfat was measured at farrowing and weaning. During d 0 to 7 of lactation, increasing litter size (P < .03) and dietary lysine (P < .10) increased litter weight gain. There was a tendency (P = .12) for a lysine × litter size interaction. Litter weight gain of sows nursing 8 or 9 pigs was not affected by increasing dietary lysine, however, increasing dietary lysine increased litter weight gain of sows nursing 10 or 11 pigs. Increasing litter size increased litter weight gain (P < .03) litter weight gain d 7 to 14 with a numerical (P < .17) interactive increase in litter weight gain as lysine and litter size increased. However, for the 14 to 21 d lactation period, a lysine × litter size interaction was not observed (P > .06). Neither increasing litter size nor lysine influenced litter weight gain. Sow weight loss (d 0 to 21) was increased (P < .01) by increasing litter size but decreased (P < .02) by increasing dietary lysine intake. Sow backfat loss was unaffected by either litter size or dietary lysine. In conclusion, in early lactation, litter size interactively affects the sow's dietary lysine requirement. However, large litter sizes appear to show a positive effect on the sow's reproductive performance, thereby minimizing the influence of dietary lysine during late lactation (d 14 to 21). Interaction means of dietary lysine and litter size are reported below.

Key Words: Sows, Lysine, Litter Size

Dietary lysine × litter size interaction (P < .12) Effect of litter size (P < .01)

Ribo thanked and everyone for their hard work.

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