

increased days to market (C vs UC, 99.8 vs 95.6 days, $P < .05$). Neither space nor FM reduced backfat depth or improved carcass leanness of barrows ($P > .1$). The combination of low space allocation and FM reduced barrow feed intake (F20C vs CG, 2.35 vs 2.32 kg, $P > .1$) to a level similar to gilts but resulted in decreased lean gain (F20C vs CG, 270 vs 294 g/day, $P < .05$). Backfat depth and carcass lean percentage of barrows was not improved (F20C vs CG, 2.03 vs 1.78 cm, $P < .05$; 49.10 vs 51.59%, $P < .01$, respectively) compared to gilts. These data suggest crowding was more effective in decreasing barrows' growth rate than dietary FM additions.

Key Words: Barrows, Feather Meal, Space Allocation

134 Effect of litter size on amino acid mobilization among different tissues in lactating sows. S. W. Kim* and R. A. Easter, *University of Illinois*.

Twenty-eight primiparous sows were used to determine the effect of litter size on nutrient mobilization in lactating sows. Litter size was set to 6, 7, 8, 9, 10, 11, or 12 pigs within 2-d postpartum by cross-fostering. Four sows were allotted to each litter size group. Sows were allowed to consume a maximum of 13.6 Mcal ME and 46.3 g lysine per day during lactation. Sows were slaughtered on d 20.6 ± 1.1 of lactation. Liver, gastrointestinal tract (GIT, composed of the empty stomach, empty small and large intestines, cecum and rectum), reproductive tract, and other organs (excluding liver, GIT, reproductive tract, and mammary gland) were separated from the carcass. Gastrointestinal tracts were manually stripped of contents and flushed with water to remove digesta. Hot carcasses were split longitudinally at the midline after removing mammary glands. Individual organs and carcasses were weighed and ground for chemical analysis. Dry matter, protein, and amino acid contents were measured. During the 21-d lactation, there were 32.32, 1.03, 0.51, 0.43, and 0.64 g lysine mobilized from carcass, GIT, liver, uterus, and other organs, respectively, for each one pig increase in litter, while there was 2.56 g lysine accumulation in mammary tissue. There were 14.96, 0.36, 0.29, 0.15, and 0.33g methionine mobilization from carcass, GIT, liver, uterus, and other organs, respectively, for each one pig increase in litter, while there was 0.79 g methionine accumulation in mammary tissue. There were 12.68, 0.76, 0.61, 0.27, and 0.46g threonine mobilization from carcass, GIT, liver, uterus, and other organs, respectively, for each one pig increase in litter, while there was 1.50 g threonine accumulation in mammary tissue. Ninety three percent of lysine mobilized from all tissue was of carcass origin. The uterus contributed more lysine than any other organs.

Key Words: Sow, Amino Acid Mobilization, Lactation

135 Supplemental copper proteinate for sows. J. T. Yen*, J. J. Ford, and J. Klindt, *USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE*.

Our previous study showed that supplemental copper proteinate (CuP) increased the percentage of first- and second-parity sows bred ≤ 7 d postweaning from 70 to 87%. In the present study, three trials were conducted to determine the effect of supplemental CuP on the litter size of sows bred ≤ 7 d postweaning. Sows (77, 59 and 56 in Trials 1, 2 and 3, respectively) assigned to basal (B) or CuP treatments were moved into farrowing crates at d 108 of gestation. Each sow was fed once daily 2.72 kg of a lactation diet before farrowing and to appetite during lactation. The diet fed to each CuP sow was top-dressed daily with 128 mg of CuP during both pre-farrowing and lactating periods. Pigs were weaned at 18 d of age. After weaning, sows in Trials 1 and 2 were housed in solid-floor breeding pens with a shallow open gutter, whereas sows in Trial 3 were housed in pens used in our previous study with partially slotted floor. Each B sow was fed once daily 1.82 kg of a basal gestation diet, whereas the CuP sow was fed 1.82 kg of the basal gestation diet supplemented with 23 ppm CuP. Weaned sows were checked for estrus once daily with boars for 14 d and artificially inseminated (AI) on 2 successive days at the first postweaning estrus. Within 3 d after mating, sows were moved to gestation pens and fed once daily 1.82 kg/sow of B or CuP gestation diet until they were slaughtered 108 d after the first AI. Combined data of Trials 1 and 2 showed that, for B and CuP groups, percent sows bred ≤ 7 d postweaning were 60 and 55%, percentage of sows pregnant were 42 and 39%, corpora lutea (CL)/sow were 14.0 and 14.3 and live fetuses/sow were 6.9 and 7.4, respectively.

No statistical treatment difference ($P > .05$) was found. A numeric advantage for CuP over B existed in Trial 3 when sows were housed in the same breeding facility as our previous study. For B and CuP groups of Trial 3, sows bred ≤ 7 d postweaning were 73 and 80%, sows pregnant were 46 and 60%, CL/sow were 15.3 and 16.2 and live fetuses/sow were 8.4 and 9.9 ($P = .13$), respectively. It is concluded that, with favorable housing, supplemental CuP improves reproductive performance of sows.

Key Words: Sows, Copper Proteinate, Reproductive Performance

136 Effect of chromium picolinate on parity one sow reproductive and farrowing performance. S.S. Dritz*, M.D. Tokach, R.D. Goodband, and J.L. Nelssen, *Kansas State University, Manhattan*.

Supplemental chromium picolinate (200 ppb) or similar control diets without supplementation were fed to gilts (PIC C-22) from 23 kg through farrowing their first litter. During gilt development, gilts were housed in fully slatted, environmentally regulated finisher rooms. Gilts were then transferred from the gilt finisher site to one of 2 - 1,500 sow farms in groups of approximately 25 per week. An interaction ($P < .04$) between farm and treatment was noted for transfer age due to a management decision to delay transfer of control gilts to one farm at a slightly older age ($178.7 \pm .5$ vs $180.9 \pm .7$ d of age for chromium supplemented and control, respectively). After transfer, gilts were group housed in an acclimation room and heat checked daily. All gilts were bred by artificial insemination and were placed in gestation stalls immediately after breeding. The gilts then remained in the same stall until they were either detected open or moved to the farrowing house on d 112 of gestation. Gilts were full-fed during development and acclimation and fed according to body condition (1.8 to 2.7 kg/d) during gestation. All diets during development and gestation met or exceeded NRC (1998) recommendations. The mean age at first service was 9.3 days older ($P < .01$; 235.1 ± 1.8 vs 226.4 ± 2.7 d) for chromium supplemented compared with control gilts. A total of 343 chromium supplemented and 148 control gilts were used for the study at first service. The percentage of culls before first service and first service farrowing rate were not different between treatments (4.1 vs 3.9% and 74.5 vs 79.7% for chromium and control treatments, respectively). Total ($10.8 \pm .2$ vs $10.7 \pm .3$) and live ($9.6 \pm .2$ vs $9.5 \pm .3$) pigs born in parity 1 were not different between chromium supplemented and control gilts. In this experiment, feeding chromium picolinate during development and gestation did not influence reproductive and farrowing performance of parity 1 sows.

Key Words: Sows, Chromium Picolinate, Litter Size

137 Use of chromium tripicolinate to improve pigs born alive confirmed in multiparous sows. M. D. Lindemann*¹, R. E. Hall², and K. W. Purser³, ¹University of Kentucky, Lexington, ²Land O'Lakes, Inc., Fishers, IN, ³Prince Agri Products, Inc., Quincy, IL.

Multiparous Cotswold sows ($n = 294$) from a commercial production facility were used to evaluate the effect of supplemental Cr from chromium tripicolinate (CrP, CHROMAX[®] 0.04%, Prince Agri Products, Inc., Quincy, IL) on litter size. Sows were assigned to dietary treatment (0 or 200 ppb Cr from CrP in corn-soybean meal based diets) based on parity. Dietary treatments were initiated following weaning and were continued for up to three reproductive cycles. When data were summarized across all cycles, CrP-supplemented sows farrowed more ($P < .05$) total (12.39 vs 11.45) and live pigs/litter (11.45 vs 10.77) than unsupplemented sows. There was no treatment effect on weaned pigs/litter (mean of 8.83). When data for the first cycle were compared to that for cycles 2 and 3, it revealed a larger increase in litter size at birth with CrP usage during cycles 2 and 3 than during cycle 1. CrP-supplemented sows farrowed .35 more ($P > .20$) live pigs than control sows for cycle 1 and 1.33 more ($P < .05$) live pigs/litter for cycles 2 and 3. Historical averages for the herd were 10.77 and 10.15 total and live born pigs, respectively. The response to CrP supplementation in total and live pigs/litter, then, was observed even though control sow values exceeded historical averages. However, pigs weaned/litter was very similar to the historical average of 8.89 (8.81 and 8.85 for control and CrP-supplemented sows, respectively). Because sows had similar lactation feed intake and their pigs had similar birth weights (3.07 vs 3.10 for control and CrP supplemented sows, respectively), the lack of a litter size response at weaning was likely due to a management or facility constraint rather than a biological effect related to the dietary treatments. The results add to a body of evidence