Sponsors

University of Minnesota
College of Veterinary Medicine

College of Food, Agricultural and Natural Resource Sciences

Extension Service

Swine Center

Thank you to **IDEXX Laboratories** for their financial support to reproduce conference proceedings

Evaluation of the effect of group size and structure on welfare of gestating sows in pens with electronic sow feeders (ESFs)

L.Anil., J. Deen., S.S.Anil, S.K. Baidoo and R.D.Walker
University of Minnesota

Welfare of 400 pregnant sows (Yorkshire X Landrace crossbreds, 146 – 294 kg body weight and parities of 0-7) housed in dynamic, two-time mixing and static groups of different sizes in pens with ESF was evaluated in terms of salivary cortisol concentrations, injuries and behavior along with their production performance and longevity to study the effect of group size and structure on sow welfare. This National Pork Board Checkoff funded study was conducted at SROC, Waseca, of the University of Minnesota.

A fortnightly weaning system was followed in the unit and it consisted of 20-30 animals per weaning batch allotted to pens with ESF. Four weaning batches were introduced at bi-weekly intervals to a large pen with two ESFs and 6 water bowels formed by combining 2 adjacent pens to form the dynamic grouping treatment. The two-time mixing treatment was formed by adding 2 weaning batches at bi-weekly interval and 2 such pens were maintained. Static group of single weaning batch was accommodated in one half of a pen and 4 such batches were maintained. Behavior data using video camera and time-lapse VCR, and saliva samples were collected from 15 randomly identified focal sows from each newly added batch. Injury levels of all sows were assessed. Saliva collection and injury level assessment were performed the day before, day after and 2 weeks after introduction. Behavior data were collected on the day, day after and 2 weeks after introduction. The body weight and backfat thickness of all sows were assessed on the day of weaning and at 109 days of gestation. Video tapes were analyzed for agonistic non-agonistic, postural and stereotypic behaviors and saliva samples were analyzed for cortisol concentration using RIA. The data were analyzed using descriptive statistics, repeated measures of ANOVA, spearman rank correlations, ANOVA and 2-sample proportion tests.

The dynamic group had the highest (P<0.05) total injury score (TIS). Cortisol concentration and TIS were higher (P<0.05) at day after mixing compared with those at 2 weeks after mixing. The TIS at 2 weeks after mixing was higher (P<0.05) in the dynamic group. Number of queuing was higher (P<0.05) in the two-time mixing group. The proportion of time spent lying and standing were lower (P<0.01) in the dynamic group. The proportion of time spent walking and the average number of non-agonistic social interaction were lower (P<0.05 for both) in the dynamic group. The proportion of time spent queuing was less (P<0.01) at mixing day compared to that 2 weeks later among the grouping treatments. The proportion of time spent walking was less (P<0.001) on the day following mixing. The proportions of time spent on stereotypies and standing were the highest (P<0.001) at 2 weeks post-mixing. The proportions of time spent lying was higher (P<0.05) in the static group on the day following mixing compared to the dynamic group. The proportion of time spent walking was less (P<0.05) in the dynamic group on the day of mixing and two weeks later. Cortisol concentration and TIS were positively correlated (P<0.05) in dynamic and two-time mixing groups. Total aggression was positively correlated (P<0.05) with number of queuing in the all the systems. Total aggression was positively correlated (P<0.05) with queue duration in all the treatments. The performance and longevity of sows in the groups were similar. The higher TIS and lower number of non-agonistic social interactions indicated that the dynamic grouping system may affect sow welfare.