

Title: Space requirements of weaned pigs during transportation (#06-011) REVISED

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Date submitted: 3/5/08

Scientific abstract

Currently there are no trucking quality assurance recommendations for space allowance of weaned pigs during transport. The objective of this research was to establish a first estimate of the space requirements of weaned pigs during transport in winter, summer, and spring/fall based on measures of animal well-being. A commercial semi-trailer was fitted with compartments that provided 0.05, 0.06, and 0.07 m²/pig (on the upper and lower deck) with a constant 100 pigs per compartment. Cameras were placed in each experimental compartment to record behaviors and postures of the pigs during transport. The frequencies of standing, lying, sitting, standing on another pig, and lying/huddling on top of another pig were recorded using 1 min scan samples during the entire duration of transport. Blood samples were taken and weights and lesion scores recorded from 4 pigs (5.1±0.10 kg) per compartment for performance and physiology measures before and after transport (n=32 pigs/treatment, total of 96 pigs/season). The trial was replicated 4 times per season. Pigs were transported between 60 and 142 min to the wean-to-finishing site using the same route each season. Temperature and relative humidity were; 10.5±6.15°C and 44.8±9.71% (winter), 28.4±1.23°C and 59.8±4.42 % (summer), 20.4±4.00°C and 52.7±10.82% (fall), and 22.0±2.49°C and 58.5±10.48% (spring). Data were analyzed using the MIXED procedure of SAS. The trailer was the experimental unit. Wind speed in the trailer averaged 1.76 m/s over all four seasons. The neutrophil to lymphocyte ratio, Cortisol, blood urea nitrogen, total protein, albumin, aspartate aminotransferase,

These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed

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and creatine kinase increased ($P < 0.05$) during transport regardless of space allowance or season. Body weight was reduced ($P < 0.05$) during transport regardless of space allowance in summer and fall/spring. Lesion scores were increased ($P < 0.001$) during transport regardless of space allowance or season. Pigs transported at $0.06 \text{ m}^2/\text{pig}$ spent less ($P < 0.001$) time standing than pigs transported at 0.05 and $0.07 \text{ m}^2/\text{pig}$ during the last 15 min of transport during winter. Pigs transported at $0.05 \text{ m}^2/\text{pig}$ spent more ($P < 0.05$) time standing than pigs transported at 0.06 and $0.07 \text{ m}^2/\text{pig}$ during the last 15 minutes of transport during summer. Time spent performing total lying behavior differed ($P < 0.05$) between pigs transported at 0.06 and $0.07 \text{ m}^2/\text{pig}$ between 76-120 and 135+ min after transport during spring/fall. In conclusion, space allowances of 0.06 or $0.07 \text{ m}^2/\text{pig}$ are preferable when transporting weaned pigs during all seasons.