

Comparison of Gilt Behavior when Fed *Ad Libitum* or Twice Daily

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Jessica Colpoys, Graduate Research Assistant;
 Amber Haritos, Undergraduate Student;
 Paige Mercer, Undergraduate Student;
 Kirsten Springman, Undergraduate Student;
 Nicholas Gabler, Associate Professor;
 Anna Johnson, Associate Professor, Department of
 Animal Science, Iowa State University

Summary and Implications

The objective of this study was to compare two divergent feeding patterns and evaluate their impact on gilt behavior. Eleven gilts were provided *ad libitum* access to feed (*ad lib*) and 12 gilts were allowed to eat twice daily (2x). Video of gilt behavior was analyzed 51 days after the start of feed treatments. Gilts fed 2x tended to stand more, spent longer interacting with environmental enrichment, and spend less time eating than *ad lib* gilts. These results suggest that feeding regimen slightly altered the behavior of individually housed gilts.

Introduction

A primary swine production goal is to increase feed efficiency. While most grow-finish swine production systems currently utilize *ad libitum* feeding, recent research suggests that altering this feeding regimen may impact swine feed efficiency. Understanding how a feeding regimen impacts swine behavior is important as it can be an indicator of hunger and satiety. Therefore, the objective of this study was to compare two feeding regimen and evaluate their impact on gilt behavior.

Materials and Methods

Twenty-three gilts were randomly blocked by body weight (55.9 ± 5.2 kg on test BW) into two feeding regimen; 1) *ad libitum* access (*ad lib*; n = 12) or 2) twice daily access where gilts were allowed to eat *ad libitum* between 08:00-09:00 h and again from 17:00-18:00 h (2x; n = 11). Gilts were housed in individual pens measuring 2.21 m long x 0.61 m wide, and were acclimated to this housing three days prior to trial initiation. Each pen was located on slatted concrete flooring and contained a polypropylene rope tied to an overhead bar for environmental enrichment, a water nipple, and a single-space feeder with a lid. To achieve the 2x feeding treatment, feeder lids were latched to prevent gilts from accessing feed during non-meal times. Four color cameras (Panasonic, Model WV-CP-484, Matsushita Co. LTD., Kadoma, Japan) were positioned above the pens to record video on day 51 of the study. Video was continuously analyzed using Observer software (The Observer XT

version 10.5, Noldus Information Technology, Wageningen, The Netherlands) from 7:00-19:00 h to assess gilt behavior (Table 1).

Table 1. Ethogram of recorded behaviors.

Behavior	Description
Stand	All four hooves are bearing weight on the pen floor with limbs extended or the pig is walking with limbs in both extension and flexion and moving through the pen.
Sit	Front limbs are extended and bearing weight, and the rear limbs and body are in contact with the pen floor.
Lie	The pig's body and limbs are in contact with the pen floor.
Eat	Feeder lid is up with the pig's mouth and nose in the feeder.
Enrichment Interaction	The pig is touching the rope enrichment with its mouth or nose.

Data Analysis: Data were analyzed using the GLIMMIX procedure of SAS 9.3 with a beta distribution. The model included the fixed effects of treatment, covariate of week 7 body weight, and pig as the experimental unit. The significance level was fixed at $P \leq 0.05$ and tendency at $0.05 < P \leq 0.10$.

Results and Discussion

Gilts fed 2x tended to spend 5% more time standing than *ad lib* gilts ($P = 0.07$); however, no treatment differences were observed for percent of time spent sitting or lying ($P \geq 0.15$). Standing may be suggestive of swine welfare as increased standing is typically observed when pigs are hungry. The results presented show slight differences in standing; therefore, further investigation in this area is warranted.

Gilts fed 2x spent 15% less time eating ($P = 0.0002$) and 4% more time interacting with enrichment than *ad lib* gilts ($P = 0.03$; Figure 1). In humans, it has been reported that prolonged chewing reduces self-reported hunger; therefore, chewing enrichment may be a coping mechanism for pigs with restricted access to feed.

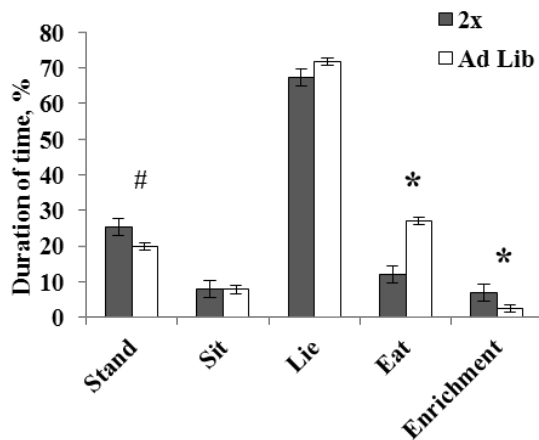


Figure 1. Percent of time gilts spent performing behaviors when undergoing twice daily (2x) or *ad libitum* (ad lib) feeding treatments. ‘*’ indicates significance at $P \leq 0.05$ and ‘#’ indicates tendency at $0.05 < P \leq 0.10$.

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