

Grow-Finish Pigs Activity Levels When Fed Using a Feed Intake Recording Equipment (F.I.R.E.) Feeder

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Larry J. Sadler, ag specialist;
Anna K. Johnson, assistant professor;
John Newton, superintendent, Ag Resource Center;
Ken J. Stalder, associate professor;
Jack C. M. Dekkers, professor,
Department of Animal Science

Summary and Implications

The objective of this study was to determine the appropriate hours during the day to score for grow-finish pigs in the main pen over a 24-h period when fed using a Feed Intake Recording Equipment feeder (FIRE[®]; Osborne Industries, Inc., Osborne, KS). This study used purebred Yorkshire grow-finish pigs that were housed in a conventional style finisher unit. *Active* category was created by combing standing, drinking and toy, which were analyzed over a 24-h period. These categories were then used to determine general activity patterns of the pigs. For activity level over time grow-finish pigs engaged in higher ($P < 0.05$) levels of activity during the 0900 and 1000 hours. Activity levels declined during the 1100 and 1200 hours; increasing again from 1300 until 1900. Activity levels stayed low until a short increase at 0100 and then remained low for 7 hours. Therefore when looking at activity patterns of purebred grow-finish Yorkshires fed under these conditions, it would be advantageous to observe the hours from 0900 through 1900 respectively.

Introduction

Behavioral observations are one type of “assay” that may be used to quantify animal biological responses. As with physiological measurements, methods of behavioral observations should be validated and selected based on the objectives of the particular study.

Animal behaviors can be observed, scored and acquired using several sampling and recording methodologies. Sampling methods include continuous, focal, scan, and behavioral methods. Recording rules can be divided into two areas: continuous and time sampling. Each sampling and recording rules have their advantages and challenges associated with them. Continuous observation over an extended period of time is considered the ‘gold standard’, but often due to labor, time, and other factors, continuous observation is not always possible. The objective of this study was to determine the appropriate hours during the day to score for grow-finish pigs in the main pen over a 24-h period when fed using a Feed Intake Recording Equipment feeder (FIRE[®]; Osborne Industries, Inc., Osborne, KS).

Materials and Methods

Animals and Housing: Thirty purebred Yorkshire finisher boars (~111.13 kg) were observed over a 24 hour period. Pigs were housed in a conventional grow-finish facility at the ISU Lauren Christian Bilsland Swine Breeding Farm. The grow-finish barn is a naturally ventilated barn with totally slatted flooring and curtain sides, which provided natural light:dark cycles. On this day, sunrise was at 0723 and sunset at 1644. Room temperatures were maintained within the guidelines of the Swine Care Handbook, as appropriate for pigs of this size (NPB, 2003). Two identical pens housing 16 or 14 pigs (2.29 m width x 5.64 m length) providing 0.81 m² or 0.92 m² were filmed. Each pen contained two nipple waterers (Edstrom, Waterford, WI), adjusted to the appropriate height for these pigs. Feed was provided ad lib to all pig using a F.I.R.E.[®] (Osborne Industries, Inc., Osborne, KS) feeder (Figure 1). Each pen had one Bite-Rite chew toy (Ikadan, Ikast, Denmark) suspended from the ceiling with the chain situated in the middle of the pen towards the vented side hanging at pig head level.

Figure 1. Photos of pen containing finish pigs with the F.I.R.E. feeder located on the bottom left and right.



Measures:
Video was collected in color mode with a single Panasonic camera (Model WV-CP484, Matsushita

Co. Ltd., Kadoma, Japan). Video was captured on a DVR (RECO-204, Darim Vision, Pleasanton, CA) for 24-h at 5 frames per second (1200 12/04/2007 through 1159 12/05/2007). All pigs were observed on a pen basis over the 24-h period using a 1-min scan technique by one experienced observer. *Active* category was created by combing standing (defined as maintaining an upright posture body position by supporting the body weight on the feet with the legs extended), drinking (individual pig’s mouth was around the water nipple) and toy (defined as a Bite-Rite chew toy where the pig’s mouth surrounded the toy), which were analyzed over a 24-h period. Active was

scored by playing the video back using Elecard MPEG2 Player (Elecard Ltd, Tomsk, Russia), and recorded into an Excel (Microsoft Corp., Redmond, WA) data sheet.

Statistical Analysis: Active data were expressed hourly on a pen basis as percentages and were subjected to a square root and arcsine transformation process to achieve a more normalized distribution before statistical analyses occurred. The experimental unit was the pen. Data was analyzed using the Proc Mixed procedure in SAS® (SAS Inst. Inc. Carry, NC). Pen (two pens) and hour (1200 – 1159) were used in the class statement. The statistical model main plot included the behavior and postures of interest. A *P*-value of ≤ 0.05 was considered to be significant.

Results

Grow-finish pigs engaged in higher ($P < 0.05$) levels of activity during the 0900 and 1000 hours. Activity levels declined during the 1100 and 1200 hours; increasing again from 1300 until 1900. Activity levels stayed low until a short increase at 0100 and then remained low for seven hours. During 1400 pigs were the most active, engaging in active behaviors for 43% of that hour. Therefore, when looking at activity patterns of purebred grow-finish Yorkshires fed under these conditions, it would be advantageous to observe the pigs between 0900 through 1900 hours for their activity levels.

Figure 2: Least squared means and standard errors for active hours of purebred Yorkshire grow-finish pigs when feed with a F.I.R.E. feeder in a conventional housing



