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Time-restricted feeding of pigs: social and feeding behavior

Abstract

Twenty finishing pigs were used to evaluate effects of time-restricted feeding on social interactions and feeding patterns of pigs at feeding time. Correlation analysis for pairs of traits, involving feeding activities, social interactions, and rate of gain indicate that more aggressive pigs went first to the feeder, fed more frequently, and gained faster. Although on continuous artificial lighting, timed-fed pigs displayed more feeding and aggressive behavior during day light hours.; Swine Day, Manhattan, KS, November 15, 1984

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TIME-RESTRICTED FEEDING OF PIGS: SOCIAL AND FEEDING BEHAVIOR

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Summary

Twenty finishing pigs were used to evaluate effects of time-restricted feeding on social interactions and feeding patterns of pigs at feeding time. Correlation analysis for pairs of traits, involving feeding activities, social interactions, and rate of gain indicate that more aggressive pigs went first to the feeder, fed more frequently, and gained faster. Although on continuous artificial lighting, timed-fed pigs displayed more feeding and aggressive behavior during day light hours.

Introduction

Earlier research indicated that finishing pigs fed 6 hr daily in two 3-hr periods performed similarly to pigs fed ad-libitum. However, behavioral implications of time-restricted feeding have not been evaluated.

Procedures

Ten crossbred barrows and 10 crossbred gilts were housed in an open-sided building with curtains and a study was carried out in a 10 x 10.5 ft pen with 50% slatted floor and 50% solid concrete floor during May and June, 1983. A programmed, time-restricted feeding system (Chore Time Equipment, Inc.), was used to release feed and water from 1100 to 1400 hr and from 2300 to 0200 hr with two extra watering periods from 0500 to 0800 hr and from 1700 to 2000 hr. Artificial lights were on 24 hr/day.

Information was gathered during 18 observational periods at feeding time with 13 periods during the day time and 5 at night. All pigs were identified with a number painted on their rump and shoulder. A scanning technique was used to record feeding and social interactions in the pen. The recorded feeding activities were characterized as feeding (pig's head at the bowl of the feeder), and waiting (pig's head directed to the feeder but obstructed by one or more pigs). Agonistic activities were recorded as bites, head thrusts, threats, fights, and displacements of one pig by another. Performance was evaluated by average daily gain (ADG) during 25 days. A social rank index (SRI) was used to express the relative social status of each individual to its penmates. The SRI was $X=1/2\ (D-S+N+1)$, where D= number dominated, S= number dominating, and N= group size.

Results and Discussion.

Frequencies of feeding and of social interactions were greater ($P<.05$) during daytime observations (table 1). Even with lights on and feed available at night, pigs displayed most of their activities during periods of natural daylight.

From the agonistic acts recorded, displacements, head thrusts, and bites comprised 97% of the total number of the aggressions (table 2). Pigs frequently replaced one another at the feeder. Frequency of aggression was found to be closely correlated with most of the feeding parameters and with rate of gain. Social status followed the same pattern but trends were more modest (table 3).

Table 1. Average Number of Feeding and Aggressive Acts Performed by Time-restricted Fed Pigs

Item	Daytime Feeding Period	Nighttime Feeding Period
Frequency of feeding	16.9[a]	7.5
Frequency of waiting	3.5[a]	0.6
Frequency of aggression	5.5[a]	1.5

[a]Different from nightime pigs ($P<.05$).

Table 2. Number and Proportion of Agonistic Acts

Agonistic Acts	Frequencies [a]	Percentage
Displacements	607	38
Head Thrusts	519	32
Bites	434	27
Fights	29	2
Threats	19	1

[a]Values are total number of acts for 18 observational periods.

Table 3. Correlation Coefficients for Social, Feeding and Performance Traits of Timed-fed Finishing Pigs

Item	Social Rank Index	Frequency of Aggression
Frequency of Aggression	0.77**	
Average Daily Gain	0.27	0.56**
Time to First Feeding	-0.24	-0.50*
Frequency of Feeding	0.21	0.48*
Frequency of Bouts	0.32	0.69**

*P<.05
**P<.01