Correlations for performance traits of growing boars (1976)

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Research and Extension

Correlations for Performance Traits of Growing Boars

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Summary

Performance records of 275 boars, beginning at 65 and ending at 250 lbs., were analyzed to determine correlations of performance traits. Fastest growing boars were more efficient (r=-.49). In addition, faster gaining boars also tended to have more backfat (r=.20). Backfat thickness and feed efficiency were not related (r=.01). Average daily gain from 65 to 220 lbs. was highly correlated with average daily gain from 65 to 250 lbs. (r=.92), which suggests that boars need not be tested to heavier weights. The feed/gain ratios during both test periods likewise were highly correlated (r=.82).

Introduction

Relationships between performance traits of growing pigs have always interested swine producers. Selecting to improve trait A may or may not improve trait B. It may be easier to improve some traits by selecting a trait that significantly correlates with the desired trait than by selecting directly. In this study we evaluated growth patterns and feed efficiency of boars between 65 and 250 lbs. to determine correlations between performance traits, with minimal environmental variation.

Procedure

Data were collected from 275 boars at the swine testing station during four test periods. The boars represented 66 purebred herds from Kansas and four breeds (Chester White, Duroc, Hampshire, and Yorkshire).

Two littermate boars were housed in a 4' x 16' pen with a solid concrete floor, one-hole self feeder, and an automatic waterer. Boars were fed a corn-sorghum grain-soybean meal diet containing 17.4% crude protein, 0.75% calcium, 0.60% phosphorus.

Performance traits studied were:

1) Average daily gain and feed/gain the first 35 days of the test. (S-35 day)
2) Average daily gain, feed/gain from 35 days on test to 220 lbs. (35 day-220)
3) Average daily gain, feed/gain after 220 lbs. to 250 lbs. (220-250)
4) Average daily gain, feed/gain from 65 to 220 lbs. (S-220)
5) Backfat thickness and loin eye area at 220 lbs. Determined by Model 721 scanogram.
6) Average daily gain, feed/gain from 65 to 250 lbs. (S-250)

Results and Discussion

Correlations of average daily gain with other performance traits at various stages of growth are presented in table 44. Average daily gain the first 35 days on test correlated poorly with daily gain from 35 days to 220 or from 220 to 250 lbs. (r=.13 and .04 respectively). Likewise, 35 day to 220 ADG correlated poorly with gain from 220 to 250 lbs. (r=.03), indicating that growth rate at one stage of development is a poor indicator of future growth rate.

Table 44. Correlations of average daily gain at various stages of growth.

	r
S-35 day ADG with 35 day to 220 ADG	.13
S-35 day ADG with 220 day to 250 ADG	.04
S-35 day ADG with S-220 ADG	.69
S-35 day ADG with S-250 ADG	.63
35 day to 220 ADG with 220 to 250 ADG	.03
35 day to 220 ADG with S-220 ADG	.80
35 day to 220 ADG with S-250 ADG	.74
220-250 ADG with S-220 ADG	.04
220-250 ADG with S-250 ADG	.39
S-220 ADG with S-250 ADG	.92

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Table 45 presents the correlations between feed efficiencies at various growth periods. They followed a pattern similar to those for rate of gain. The efficiency of one growth period did not correlate well with efficiencies during other periods, but the correlation between S-220 F/G and S-250 F/G was .82.

Table 45. Correlations of feed efficiency at various stages of growth.

	r
S-35 day F/G with 35 day to 220 F/G	.16
S-35 day F/G with 220 to 250 F/G	.01
S-35 day F/G with S-220 F/G	.58
S-35 day F/G with S-250 F/G	.43
35 day to 220 F/G with 220-250 F/G	.24
35 day to 220 F/G with S-220 F/G	.81
35 day to 220 F/G with S-250 F/G	.66
220-250 F/G with S-220 F/G	.19
220-250 F/G with S-250 F/G	.59
S-220 F/G with S-250 F/G	.82

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Table 46 presents correlations of growth traits at various stages with backfat thickness at 220 lbs. Boars that grew faster to 220 lbs. tended to have slightly more backfat than those that grew slower. The correlation between rate of gain and backfat was 0.20. Feed efficiency and backfat thickness were not correlated (r=.01).

Table 46. Correlations of growth traits at various stages with backfat thickness at 220 lbs.

	r
S-35 day ADG with BF/220	.30
35 day - 220 ADG with BF/220	.06
220-250 ADG with BF/220	-.18
S-35 day F/G with BF/220	-.16
35 day - 220 F/G with BF/220	.10
220-250 F/G with BF/220	.26
S-220 ADG with BF/220	.20
S-250 ADG with BF/220	.14
S-220 F/G with BF/220	.01
S-250 F/G with BF/220	.04

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Table 47. Correlations of indicated performance traits.

	r
S-220 ADG with S-220 F/G	-.40
S-220 ADG with backfat	.20
S-220 ADG with loin eye estimate	-.09
S-220 F/G with backfat	.01
S-220 F/G with loin eye	-.04
Backfat with loin eye	-.14
S-220 ADG with S-250 ADG	.92
S-220 F/G with S-250 F/G	.82

Table 47 lists correlations of common performance traits. The correlation between average daily gain and feed-gain ratio from start of test to 220 lbs. was -.49, indicating faster-gaining boars require few lbs. of feed per pound of gain. Boars with less backfat tended to have larger loin eye areas (r=-.14) but the relationship was extremely low. Loin eye area correlated poorly (r=-.09) with average daily gain.