THE EFFECT OF PERFORMANCE ON SELLING PRICE OF TESTED BOARS

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Story in Brief

Performance records and sale prices of 1310 boars that sold at auction following testing at the Oklahoma Swine Evaluation Station were evaluated to determine the contribution of performance to selling price. Measures of performance were average daily gain, age at final weight, feed efficiency, backfat thickness and loin eye area. Growth traits generally had the highest correlation with selling price and average daily gain was the only trait that made a significant contribution to the selling price of boars in all five breeds (Chester White, Duroc, Hampshire, Spot and Yorkshire). Performance traits contributed to less than half of the variation in selling price for all breeds except Chester White.

(Key Words: Swine, Test Station, Performance, Growth, Breeds.)

Introduction

Swine testing stations have been in existence nationally since the 1950's. The Oklahoma Swine Evaluation Station began testing boars in 1971. Such stations can contribute to the information base that is available to purebred and commercial swine producers as they make selection decisions. It is of interest to know if the measures of performance influence buying decisions. The object of this report is to determine in this has been the case.

Materials and Methods

There were 2931 boars tested at the Oklahoma Swine Evaluation Station during the years 1971 to 1990. Of these, 1310 boars were sold at auction. There were several reasons why the remaining boars did not sell.

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Approximately 20% were not eligible due to poor performance. Boars that were deemed "unsound" by a soundness committee were excluded. Several boars were removed from the sale by their owners. In addition, a minimum bid was established at each auction and any boar that did not receive the minimum bid was removed from the auction.

Potential buyers were provided with performance information via a sale catalog. This catalog presented average daily gain, age at final weight, pen feed efficiency, backfat thickness (at 230 lb) and loin eye area (at 230 lb). In addition, the sire was identified along with the birth date, litter size and name of the owner. Sale order was determined by an index that included average daily gain, pen feed efficiency and backfat thickness.

These results were obtained from analysis of the performance data and selling price of Chester White, Duroc, Hampshire, Spot and Yorkshire boars. Berkshire, Landrace, Poland China and Red Wattle boars were also tested but the number of boars sold from these breeds was insufficient to yield meaningful results.

The simple relationship between selling price and each performance trait was obtained from pooled within year-season correlations that were calculated for each breed. The contribution of each trait to selling price (for each breed) was independently evaluated by obtaining partial regressions of price on each performance trait. These regressions were obtained simultaneously for all traits after accounting for the variation due to year and season. The trait with the least contribution to price was removed from the analysis and the data were reanalyzed. This procedure continued until only those traits with a significant ($P<.05$) contribution remained.

Results and Discussion

Correlations between selling price and each performance trait (Table 1) reveal that, among performance traits, average daily gain usually had the largest contribution to selling price. Only backfat thickness in Durocs had a larger correlation with selling price than any correlation between average daily gain and selling price. All correlations were in the "correct" direction except between backfat thickness and selling price in Hampshire boars. This correlation was, however, quite small.

The average change in selling price per unit change in the five performance traits (Table 2) also indicated that growth had an important contribution to selling price. As an example, the results from the Chester White breed indicated that buyers were willing to pay an average of $137.81 for each .1 lb per day increase in average daily gain and an additional $134.81 for each .1 in decrease in backfat thickness. Average daily gain was a significant contributor to selling price in all five breeds. Its largest effect was

Table 1. Correlations between selling price and performance traits of boars.

Breed	Average daily gain	Age at final wt	Pen feed efficiency	Backfat thickness	Loin eye area
Chester White	.26	-.18	-.08	-.16	.01
Duroc	.25	-.25	-.16	-.27	.11
Hampshire	.37	-.19	-.09	.07	.10
Spot	.31	-.18	-.14	-.00	.03
Yorkshire	.30	-.30	-.20	-.08	.02

Table 2. Partial regressions[a] of sale price on various performance traits.

Breed	Average daily gain $/.1 lb	Age at final wt $/day	Pen feed efficiency $/.1 unit	Backfat thickness $/.1 in	Loin eye area $/.1 sq in	R^{2b}
Chester White	137.81			-134.81		.64
Duroc	23.82	-2.67	-7.76	-55.63	4.34	.40
Hampshire	546.05	45.72			48.44	.37
Spot	56.61					.27
Yorkshire	29.18	-5.61	-17.57	-37.18		.37

[a] Change in selling price per unit change of the trait.
[b] Proportion of the variation in selling price that is due to performance traits.

in Hampshire boars. This value may be somewhat misleading since the highest selling ($26,000) boar in the history of the station was a Hampshire boar with the record average daily gain of 3.04 lb per day. This single outlier makes it difficult to interpret the results for the Hampshire breed. Each of the other performance traits contributed significantly to selling price for two or three breeds. The R^2 is a measure of the proportion of the variation in selling price that resulted from the linear effects of the performance traits. These values show that, except for the Chester White boars, performance contributed 40% or less to the variation in selling price.

Many other factors may contribute to selling price. The physical appearance of the boars certainly is a factor as well as the psychology created by the sale order and the competing bidders. Selling boars in order of some performance index certainly highlights those boars with superior performance but it may also artificially inflate the prices of the top boars because of a desire to own the "winner". The reputation of the breeder may have also had a large effect on selling price.

The performance information gained in a test station should be useful in determining genetic merit of the boars. The information is somewhat limited because only a few traits are measured and there is probably a large amount of pre-test variation caused by the different management levels in the various herds that contribute boars to the test. Confidence in a boar should also be a function of the reputation of the breeder. These results indicate that buyers probably understand these factors. Performance was an important contributor to selling price but there were obviously many other items that contributed to the buyers' willingness to purchase a boar.