

TRENDS IN PERFORMANCE TRAITS AND SALE PRICES OF CENTRALLY TESTED ANGUS BULLS

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Story in Brief

Postweaning records were collected on 1842 Angus bulls completing gain tests from 1982 to 1991 at Oklahoma BEEF, Inc., a central bull test station. Traits of interest were on-test weight and height, off-test weight, 365-d weight and height, average daily gain, weight per day of age, scrotal circumference, and test index. Bulls tested prior to June of 1987, completed a 140-d test. Thereafter, a test length of 112-d was used. Bulls were assigned by birth month to test groups of two-month intervals. For the 140-d analysis, year and test group within year effects were significant for all traits except scrotal circumference. The on-test and off-test weights and heights for bulls have increased from 1982 to 1987. Over time, cattle tended to enter the test at heavier weights, with average daily gain and weight per day of age tending to increase. In the 112-d data, year effects were significant only for height traits. Mean on-test and off-test weights for bulls tested 112 d were similar from 1987 to 1991. Price data and performance records on 577 bulls were used to examine relationships among sale price and performance traits. Sale price of bulls was significantly influenced by off-test weight, test index, and 365-d height. Change in selling price per unit change of the trait was \$1.65/lb of off-test weight, \$37.70/unit of test index, and \$85.00/inch of 365-d height.

(Key Words: Beef Cattle, Performance Testing, Feedlot.)

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Introduction

Oklahoma Beef, Incorporated (OBI) Central Bull Test Station was organized in June 1973 to locate and recognize superior breeding bulls and to provide a source of performance-tested bulls for commercial and purebred breeders. Over the years, numerous performance records have been collected and sales have been held.

Breeders have an interest in performance trends in the OBI cattle, and they study the impact of performance records on the sale price of their bulls. Using the data currently summarized for Angus bulls, the purpose of the current study was two-fold. Firstly, trends in performance traits for Angus bulls were examined. Secondly, relationships among sale price and performance traits were studied to determine what performance records available to bull buyers in the sale catalog had an effect of sale price.

Materials and Methods

Oklahoma BEEF, Incorporated, (OBI) is a central bull test station located 8 miles west of Stillwater on land leased from Oklahoma State University. The test station is the site for postweaning gain tests for bulls of many breeds. A board of directors consisting of equal representation by 6 member breeds governs OBI. Bulls arrive at OBI for a two to three week warm-up period before the official gain test period begins. Calves arrive at OBI at 8 to 9 months of age and finish test at approximately one year of age. Two sales per year are held in conjunction with the regularly scheduled gain tests of participating breeds.

Angus data available for the current study were from 10 years of data (1982-1991) representing complete postweaning performance records on 1842 bulls. Six test groups of Angus bulls were represented by year. Test groups were two-month intervals based on calf birth months. Two test lengths were represented in the data. From 1982 to 1987, bulls were placed on a 140-day gain test. In June of 1987, the test period was altered to a 112-day gain test. The 28 days removed to shorten the test were taken off the first part of the official test period. Thus, calves were arriving at an older age but would still complete the gain test at approximately 365-days of age.

Traits included in the study were on-test weight (ONWT), on-test height (ONHT), off-test weight (OFFWT), 365-d weight (WT365) and 365-d

height (HT365). Other traits included cumulative average daily gain for the test period (ADG), weight per day of age (WDA), off-test scrotal circumference (SC), and test index (INDEX). Test index varies by breed. For the Angus breed, the index is a composite value of the cumulative ADG ratio and WDA ratio. The test index is the sum of $.5 \times (\text{ADG ratio})$ and $.5 \times (\text{WDA ratio})$.

To examine trends in performance traits, data were analyzed separately by test length (112-d vs. 140-d). Year and test group within year differences were considered for the various traits.

Relationships among performance traits and sale price were studied using a different approach. The data available for both 140- and 112-d day tests were combined to study sale price and performance relationships. The top 70% of the bulls within a test group based on index are eligible to sell in an OBI sale. Also, bulls weighting at least 1100lb on their 365-d weight and gaining at least 3.25 cumulative ADG qualify for the sale. Only 577 bulls had both price and performance data available. This indicates that many purebred breeders choose other marketing options for their off-test bulls, rather than participating in OBI sales. Again, year and test group within year effects were considered.

Any performance traits available to potential buyers were included in the study, with the exception of ultrasonic fat and ribeye area measures and Expected Progeny Differences (EPD).

Partial correlations were computed among performance traits and sale price, after accounting for year and test group within year differences. Season differences in sale prices were considered but were found to be nonsignificant. To determine the contribution of each trait to selling price for Angus bulls, a multiple regression procedure was used. The partial regression of sale price on each performance trait was obtained.

Results and Discussion

Number of bulls tested by year has varied over time. Figure 1 presents the number of bulls across all breeds and the number of Angus bulls participating in the OBI program from 1980 to 1992. A tremendous number of bulls have been tested at OBI only in the last ten years. A low point in testing numbers occurred in 1986. This low point may have been due in part to the cattle prices at that time.

Performance trends for weight and height are depicted graphically by plotting the least squares means by year. Although the 140-d and 112-d

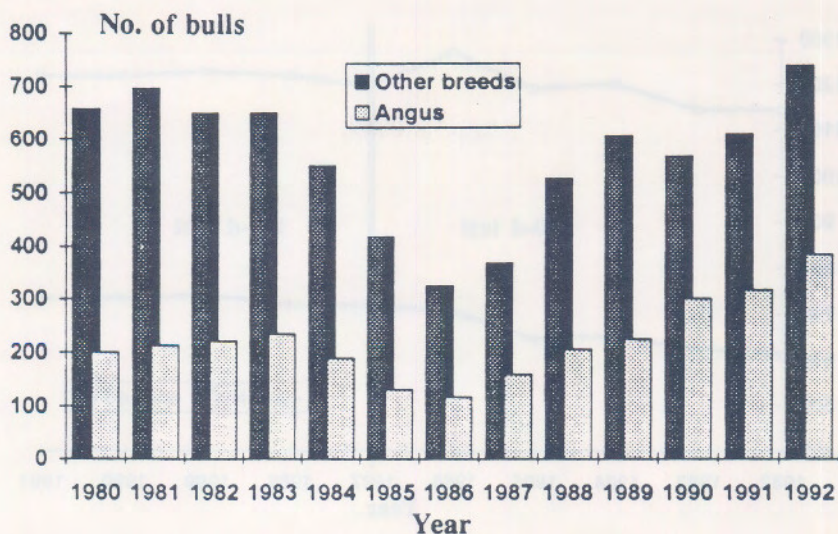


Figure 1. Number of bulls finishing test by year (1980-1992).

records were analyzed separately, they are pictured together on the graphs with a vertical line at 1987 to mark the change to the 112-d testing period. Figure 2 depicts on-test weights (ONWT) and off-test weights (OFFWT) by year. For the 140-d test, both weights tended to increase between 1982 and 1987. Year and test group effects were important sources of variation ($P < .01$) in these weights. For the 112-d test period, year differences were not evident for either weight as evidenced by the flat trend lines for both traits.

Height is a trait that has gone through changes in the beef industry over time. Figure 3 presents the on-test height and 365-d height means by year for both test periods. In both the 140-d and 112-d tests, significant year differences ($P < .01$) were found. Since 1982, changes have occurred in the on-test and 365-d heights for Angus bulls tested at OBI.

Year differences were important for all other traits during the 140-d test periods from 1982 to 1987, with the exception of scrotal circumference. The ADG and WDA trends were very similar to those presented for on-test and off-test weights. For the 112-d test periods conducted from 1987 to 1991, height was the only trait in which year differences were important. All other traits indicated no significant changes for the 112-d data.

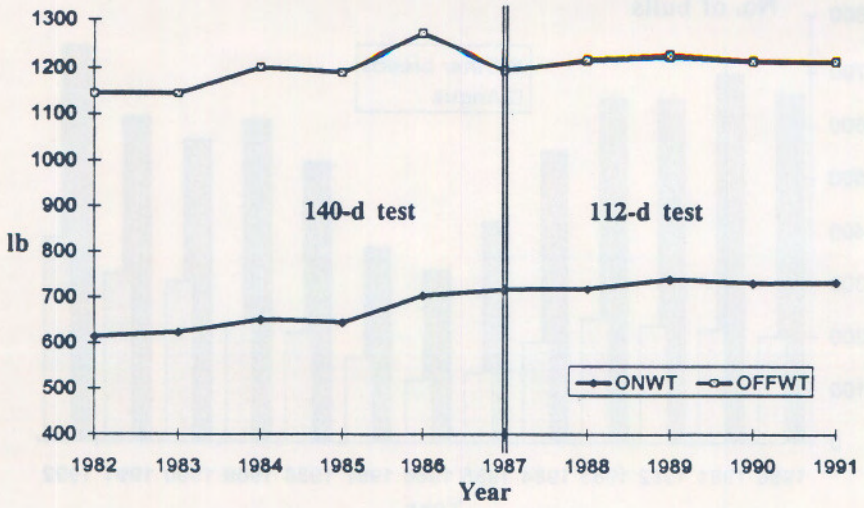


Figure 2. On-test (ONWT) and off-test (OFFWT) weight trends by year.

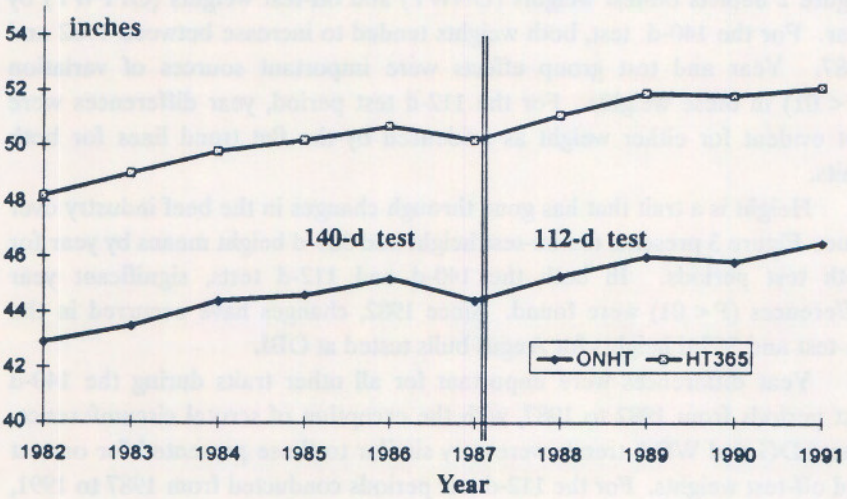


Figure 3. On-test (ONHT) and 365-day (HT365) height trends by year.

Figure 4 gives the average sale prices by year and season. Means are plotted for fall and spring sale Angus averages from 1983 to 1992. As seen earlier in the bull testing numbers (Figure 1), the sale prices also had a low point in 1986. Season differences among years were not significant.

Correlations among sale price and performance traits are given in Table 1. Price was positively correlated ($P < .01$) with all the performance traits considered. Correlations of price with other traits were strongest for test index, WDA, and off-test weight. Scrotal circumference was more lowly correlated with price.

Of all the traits associated with price, only three traits made a significant contribution to sale price. Off-test weight, test index, and 365-d height made significant contributions ($P < .01$) to selling price. Change in selling price per unit change of the trait was \$1.65/lb of off-test weight, \$37.70/unit of test index, and \$85.00/inch of 365-d height. These three traits, along with year and test group explained 56% of the variation in sale price of Angus bulls.

It is important to consider that other factors may have an influence on sale price. Sale order, pedigree, EPDs, reputation of the breeder, and other factors may have effect. Also, the impact of visual appraisal of the bulls prior and during the sale is unknown.

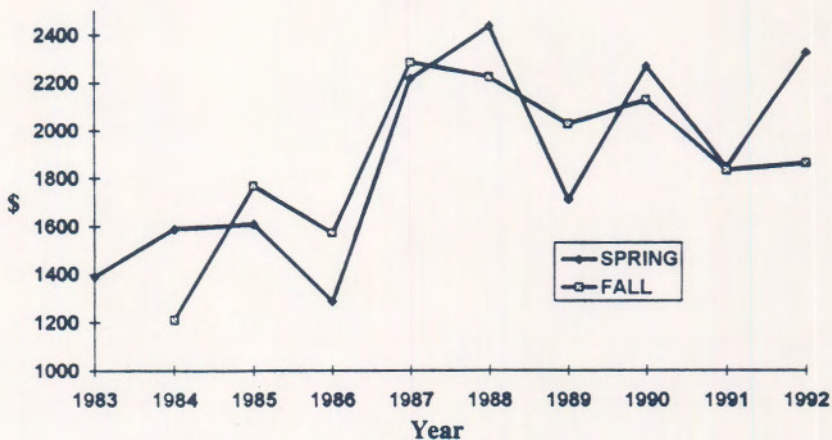


Figure 4. Average sale price of OBI bulls by year and season.

Table 1. Correlations between price and other traits.

Trait	Correlation ^a
Test Index	.56
Weight per day of age	.51
Average daily gain	.44
365-d weight	.48
365-d height	.35
On-test weight	.30
Off-test weight	.53
Scrotal circumference	.21

^a All correlations were significant ($P < .01$).

