

# A COMPARISON OF 140 DAY VS SHORTER TEST PERIODS FOR EVALUATING AVERAGE DAILY GAIN IN BEEF BULLS AT CENTRAL TEST STATIONS

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## Story in Brief

Average daily gains of 655 beef bulls from six breeds were used to evaluate the utility of test periods less than 140 days for evaluation of growth rate in centrally tested bulls. All data were obtained at the Oklahoma Beef Incorporated Bull Test Station. Correlations were obtained for 84 day average daily gain or 112 day average daily gain with average daily gain for the entire test period of 140 days. The average correlation between 84 day average daily gain with 140 day average daily gain was .82 with a range of .78 to .86 for the six breed groups. The average correlation between 112 day average daily gain with 140 day average daily gain was .91 with a range of .88 to .94. These results provide a preliminary recommendation to decrease the length of the test period for centrally tested beef bulls from 140 to 112 days.

(Key Words: Beef, Test Station, Daily Gain, Correlation, Selection)

## Introduction

Central bull testing stations serve the useful function of evaluating beef bulls from different herds for growth rate under conditions which are as uniform as possible. Breeders can use the information to highlight their own testing program or, if enough bulls from one herd are tested, can use the information to help evaluate the genetic potential for growth rate in their herd. The Beef Improvement Federation recommends a 140 day test period for evaluation of average daily gain (Hubbard et al. 1981). Since testing bulls off-farm is an increasingly expensive activity, there has been some interest in using shorter test periods in central test stations. The purpose of this research was to compare measurement of average daily gain over the entire 140 day test to measuring average daily gain for 112 or 84 days.

## Materials and Methods

Performance records of 655 bulls tested from the fall of 1983 through the spring of 1985 at the Oklahoma Beef Incorporated (OBI) bull testing station were analyzed. The bulls represented 6 breeds: Angus, Brangus, Charolais, Hereford, Limousin and Polled Hereford. The numbers of bulls in each breed, along with the average on-test weight and average weights after 84, 112 and 140 days on test are shown in Table 1. These weights should not be used to compare the average growth rates of bulls from different breeds since bulls of different breeds are not managed in an identical manner.

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Table 1. Number of bulls and average weights of bulls tested at the Oklahoma Beef Incorporated bull testing station.

Breed	n	weights			
		on-test	84 days	112 days	140 days
Angus	180	637.14	978.88	1087.01	1187.34
Brangus	83	668.16	986.19	1077.82	1164.57
Charolais	98	659.11	1024.36	1136.12	1221.38
Hereford	98	687.55	1022.84	1118.38	1204.24
Limousin	78	726.35	1041.95	1149.51	1235.82
Polled Hereford	118	675.89	1011.01	1105.00	1191.85

Bulls were brought to the test station between seven and eight months of age. They were allowed two to three weeks to acclimate to the station and the higher energy rations that were used for the actual test. On-test weight was obtained by weighing the bulls twice (two days apart) and averaging the two weights. Official on-test day was designated as the day between the days for the two weights. All bulls were weighed every 28 days throughout the test period until the off-test point when they were weighed on days 139 and 141. These weights were also averaged to obtain the official off-test weight at 140 days.

Each OBI breed group develops its own guidelines for management and feeding of the bulls. Angus and Brangus bulls were fed a commercially prepared ration containing corn and oats as the concentrate, soybean and cottonseed meal as a protein supplement and cottonseed hulls as a roughage. This diet contained 73.3% total digestible nutrients (TDN) and 12% crude protein. Bulls from the other four breeds were fed a ration with similar components but with a lower TDN (67.7%) and a higher crude protein (13.4%). Angus and Polled Hereford bulls were fed in self feeders that were replenished whenever necessary. Bulls from the other breeds were fed twice daily in fence-line bunk feeders.

Average daily gain (ADG) to 84, 112 and 140 days was calculated by dividing a bull's weight change by the appropriate number of days. The utility of 84 or 112 day ADG was evaluated by calculating correlations between them and 140 day ADG. A high correlation (>.8) indicates that the shorter period ADG was nearly as useful as the ADG calculated from the full test period of 140 days.

### Results and Discussion

Correlations of 84 or 112 day ADG with ADG calculated from the full test period of 140 days are shown in Table 2. These correlations suggest that both 84 day and 112 day ADG would be quite useful in predicting 140 day ADG. The correlations were particularly high between 112 and 140 day ADG. Despite differences in inherent growth rate and management of the breeds the correlations were quite uniform between breeds.

Correlations of this magnitude indicate that nearly as much could be learned about average daily gain of beef bulls with a 112 day test as is currently learned with a 140 day test. This has several practical benefits. If bulls were fed fewer days the expense of testing would be diminished. Many seedstock producers feel that testing bulls off-farm is

Table 2. Correlations of 84 or 112 day average daily gain with 140 day average daily gain in centrally tested beef bulls.

Breed	Correlations	
	84 and 140 days	112 and 140 days
Angus	.78	.93
Brangus	.85	.94
Charolais	.86	.88
Hereford	.81	.91
Limousin	.83	.89
Polled Hereford	.86	.92
Pooled	.82	.91

too expensive when similar information can be obtained by keeping the bulls at home. There is also some concern that bulls fed a high energy ration for 140 days require a long conditioning period before they are ready to turn in with the cows. If bulls were on test for fewer days they would probably require less time to get into breeding condition and could be used for breeding at a younger age. Test stations with limited space could also test more bulls since each bull would be on test for a shorter time period.

These results provide a preliminary recommendation that shorter test periods may be appropriate for central bull test stations. Before such a change is implemented more information is needed, particularly for bulls fed a lower energy ration. Bulls in this study were fed for maximum growth. Bulls on a lower energy ration may require more time to provide an accurate evaluation of growth potential.

#### Literature Cited

- Hubbard, D.D. 1981. Guidelines for uniform beef improvement programs. United States Department of Agriculture Extension Service Program Aid 1020.