PREDICTING FINAL AND CARCASS WEIGHTS FOR BEEF CALVES IN THE OK STEER FEEDOUT PROGRAM

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Story in Brief

Data collected on 332 fall- and 866 spring-born calves in the OK Steer Feedout Program were used to develop prediction equations to estimate final weight and carcass weight. Groups of five steers were assembled from various ranches, fed at a commercial feedlot, and then slaughtered when three of the five steers were estimated to have .5 inches of fat cover. Ranch weight was estimated by adding back 5% to the incoming weight at the feedlot. Final weight was adjusted to a 4% pencil shrink. After fitting year, season, year x season, sire breed, dam breed, and sire by dam breed interaction, residual correlations between ranch weight and final weight and carcass weight were .67 and .64, respectively. Correlations suggested ranch weight had predictive value for final and carcass weight of calves entering the feedout program. Linear regression equations were developed to use ranch weight to predict final and carcass weights. Equations suggested that spring-born and fall-born calves weaning above 600 lb are capable of reaching acceptable slaughter weights when placed directly on feed after weaning.

(Key Words: Beef Cattle, Carcass, Feedlot.)

Introduction

The OK Steer Feedout permits the cow-calf producer to obtain feedlot and carcass data on their cattle. In turn, they may be able to determine the value of their calves and make choices on marketing options for their cattle.

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When considering to send a group of calves directly to the feedlot, a major concern is whether calves will reach acceptable final slaughter weight. In the OK Steer Feedout data, about 50% of the variation in final and carcass weight is accounted for by ranch weight (or weaning weight); therefore, the purpose of the current study was to estimate final feedlot weight and carcass weight from ranch weight. This approach would allow participants to estimate a predicted final and carcass weight based on the weight of calves ready to enter the program.

Materials and Methods

OK Steer Feedout cattle are delivered to a centrally located feedlot just outside of Stillwater, OK for evaluation, with all weights and measures being obtained by OSU extension personnel. Many of the steers come from commercial herds, although certain purebred operations participate, also.

Data for the current study included six years of information (1985-1990). The feedout program is built around a schedule for two feeding groups. Fall-born steers were born from late August to November and were placed on feed in August. Spring-born calves were born from January to April and were placed on feed in early November. Program participation was 2 to 3 times greater for 1989 and 1990 than for the previous years. Most of the increase was in spring-born calves.

Ranches may send groups of steers with a minimum of five per ranch to the feedlot for evaluation. Calves must weigh a minimum of 500 lb at delivery. Consignors may enter one or more lots of five steers. Steers are slaughtered when three out of the five calves are estimated to have about .5 inch backfat or are on feed the maximum length of time (180 days).

The traits measured on the steers included in the current study are ranch weight, final weight, and carcass weight. Ranch weight was estimated for each calf by adding back 5% shrink to the incoming weight taken at the feedlot. This weight was used to estimate a weaning weight at the ranch. Final weight was adjusted with a 4% pencil shrink. These two weights were used to estimate feedlot gains to simulate a "pay-to-pay" performance in a commercial lot.

Some 25 different breeds have been represented in the feedout program. Over 90 combinations of breeds have been fed. Observations of breed performance are not meant to represent national breed differences, but to show trends observed in the program. Table 1 gives the breed of sire

Table 1. Breed of sire and breed of dam groupings and breeds represented with groups for the OK Steer Feedout data.

Grouping	Breeds represented
Breed of sire	
Angus	Angus
Brahman-British	Brangus, Red Brangus, Santa Gertrudis, Beefmaster
Brahman-Continental	Simbrah, Charbray, Gelbray, Noble Line cattle
Continental	Simmental, Saler, Charolais, Gelbvieh, Limousin, Chianina
Hereford	Hereford
Crossbred	When definite breed makeup was unknown, cattle were classified as crossbred.
Breed of dam	
Angus	Angus
Hereford	Hereford
Brahman-British	Brangus, Red Brangus, Santa Gertrudis Beefmaster
Brahman-Continental	Simbrah, Charbray, Gelbray, Noble Line cattle
Continental Sire	Charolais, Limousin, Chianina
Continental Maternal	Simmental, Saler, Gelbvieh,
Crossbred	When definite breed makeup was unknown, cattle were classified as crossbred.

and breed of dam groupings used in the study and the specific breeds represented in the groupings.

Two analyses were conducted. Residual correlations were computed between ranch weight, final weight, carcass weight and feedlot average daily gain after accounting for the following sources of variation: Year, season, year x season, breed of sire, breed of dam, and sire x dam breed.

For the second analysis, linear regression equations were developed by season after accounting for the other known sources of variation described earlier. The quadratic effect for ranch weight was nonsignificant for every analysis; therefore, only the linear effect of ranch weight was considered. In addition, linear regression equations were computed for specific breed of sire by breed of dam combinations with 25 or more available observations.

Results and Discussion

Table 2 presents the residual correlations between ranch weight and other traits. Ranch weight was highly correlated with final weight and carcass weight. Heavier weights at the beginning of the feedout were associated with heavier weights at the end. One might think that heavier weaning weights would be associated with an increase feedlot ADG, but the poor correlation (.10) did not indicated this for the feedout data. Results indicated that ranch weight had high predictive value for determining final and carcass weight.

Table 3 gives the projected final and carcass weight estimates using ranch weights for spring and fall calves. Final weights were fairly similar for each season, although fall calves tended to be heavier than spring-born calves. This would be expected since fall calves were about two months older that spring calves. Two-thirds of the time, weights would be expected to fall within 59 lb of the estimates for fall and 84 lb for spring data.

The prediction of carcass weight from ranch weight by season followed a similar pattern for spring vs fall calves. Fall calves tend to have heavier

Table 2. Residual correlations between ranch weight and other traits.

	Correlation[a]			
Trait	RW	FINAL	CAR	ADG
Ranch weight (RW)	1	.67	.64	.10
Final weight (FINAL)		1	.94	.78
Carcass weight (CAR)			1	.70
Average daily gain (ADG)				1

[a] All correlations were significant at the $P < .01$ level.

Table 3. Projected final and carcass weights for spring and fall calves.

Ranch wt	Estimated final wt, lb[a]		Estimated carcass wt, lb[b]	
	fall calves	spring calves	fall calves	spring calves
400	909	789	557	495
500	997	896	615	567
600	1084	1003	672	639
700	1172	1110	730	711
800	1260	1217	788	784
900	1347	1324	845	856

[a] Final wt: Fall = (ranch wt x .877) + 558; Spring = (ranch wt x 1.07) + 361.

[b] Carcass wt: Fall = (ranch wt x .577) + 326; Spring = (ranch wt x .722) + 206.

predicted weights than spring calves. Results suggest that calves weaning above 600 lb are capable of reaching acceptable final and carcass weights when placed directly on feed after weaning.

The spring dataset was the largest set of records available. Sire and dam breed combinations of interest were as follows (sire breed group is listed first, followed by dam breed group):

Angus x Angus
Brahman-British x Brahman-British
Brahman-Continental x Brahman-Continental
Continental x Continental sire
Continental x Continental maternal
Continental x Brahman-British

Prediction equations were developed for the breed combinations using the spring data only. Predicted values of final weight using ranch weight are plotted in Figure 1 for the following breed combinations: Angus x Angus, Brahman-British x Brahman-British, and Brahman-Continental x Brahman-Continental. When Brahman-British sire and dam breeds are used, the predicted values for final weight are very similar to results for Brahman-Continental combinations.

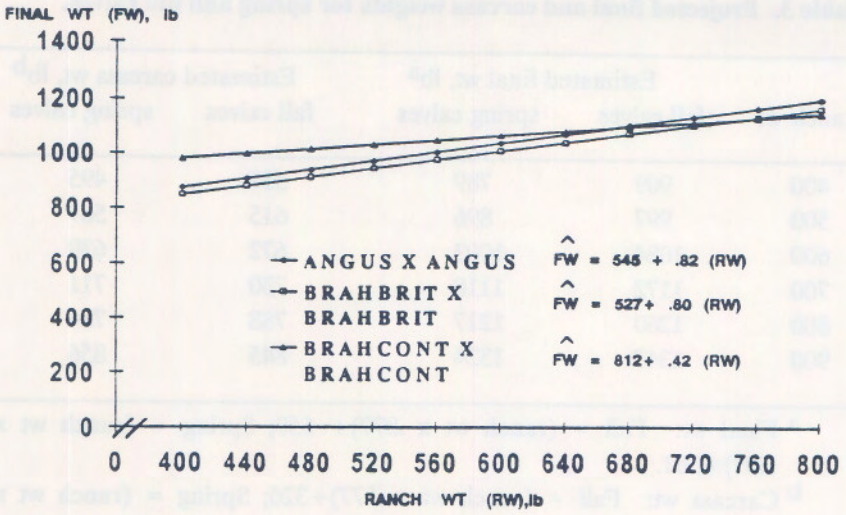

Figure 1. Prediction of final wt from ranch wt for spring calves by sire x dam breed.

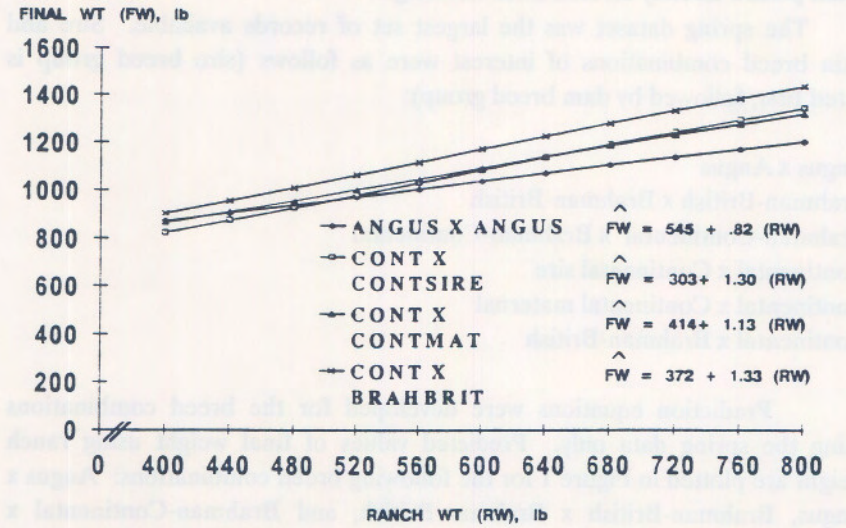

Figure 2. Prediction of final wt from ranch wt for spring calves by sire x dam breed.

Figure 2 presents the predicted values for final weight from ranch weight for Angus x Angus with the Continental combinations where Continental breeds were used on the sire side. The Continental x Brahman-British predicted values tended to be larger than the values for other breeds. Also, the potential exists for large ranch weights leading to excessive final and carcass weights.

Results for predicting carcass weight from ranch weight followed similar patterns to final weight. Participants in the program can take note of the tendency for excessive carcass weights when ranch weights are extreme in calves.