

SECTION XII PERFORMANCE TESTING

A. General

1. BAA Core Policy – The Braunvieh Association of America works to continually improve the relevance and reliability of the performance database for Braunvieh and Braunvieh influence cattle by using only the best available science for genetic prediction and breed improvement programs.
2. In the absence of procedures developed through research specifically for the Braunvieh breed, the BAA adheres to the Guidelines for Uniform Beef Improvement Programs as developed by the Beef Improvement Federation (BIF) for all performance testing and reporting.
3. BAA performance data is collected only from cattle enrolled in the Performance Option Program. BAA performance calculations are computed only for cattle enrolled in the Performance Option Program.

B. Expected Progeny Differences (EPDs)

EPD = The expected difference in performance of a bull's progeny when those progeny are compared to progeny of a sire with an EPD of zero for the trait in question. EPD values are relative; they do not indicate absolute levels of performance. Rather, they can be used to predict differences in the performance of progeny sired by different bulls. EPDs are generally reported in units of measurement for the trait or as probabilities for threshold traits.

1. Growth EPDs

a. Calving Ease Direct (CED)

CED EPD predicts the probability of calves being born unassisted out of two year-old heifers. Calving Ease Scores and Birth Weights are used in the calculation of CED. Higher values indicate greater calving ease.

b. Birth Weight (BW)

BW EPD predicts the difference, in pounds, for birth weight, and is also used in the calculation of CED.

c. Weaning Weight (WW)

WW EPD predicts the difference, in pounds, for weaning weight (adjusted to age of dam and a standard 205 days of age). This is an indicator of growth from birth to weaning.

d. Yearling Weight (YW)

YW EPD predicts the expected difference, in pounds, for yearling weight (adjusted to a standard 365 days of age). This is an indicator of growth from birth through a year of age.

2. Maternal EPDs

a. Calving Ease Total Maternal (CEM)

CEM EPD predicts the probability of a given animal's daughters calving unassisted at two years of age. Replacements heifers should be able to calve on their own. CEM EPD includes not only the predisposition for a female to calve unassisted, but also her contribution to her calf's traits (birth weight, calf shape, etc.) that make it more likely to be born unassisted. Higher values indicate greater calving ease.

b. Milk (MILK)

MILK EPD predicts the difference in maternal production of an individual animal's daughters as expressed by the weaning weight of their calves.

c. Total Maternal (MAT)

MAT EPD predicts the difference in weaning weights of calves raised by an animal's daughters. MAT includes the daughters MILK EPD plus half of her genetic contribution to her calf's WW EPD. The formula for MAT EPD is: $MAT\ EPD = MILK\ EPD + 1/2 (WW\ EPD)$

d. Stayability (STAY)*

STAY EPD quantifies expected differences among individuals in the probability of their daughters staying in the herd to at least six years of age. The primary reason for culling a cow before six years of age is her failure to become pregnant. Consequently, STAY EPD is primarily a prediction of sustained female fertility.

e. Heifer Pregnancy (HP)*

HP EPD predicts the probability of heifers conceiving to calve at two years of age.

f. Maintenance Energy (ME)*

The ME EPD predicts differences in energy requirements of mature daughters of an individual and is expressed in Mega-calories per month. Differences in Maintenance Energy requirements can easily translate into differences in feed required to maintain body weight.

* EPD still is in developmental stages.

3. Carcass EPDs

a. Carcass Weight (CW)

CW EPD predicts differences in carcass weight.

b. Rib Eye Area (REA)

Rib Eye Area (REA) predicts differences of carcass rib eye area between the 12th and 13th rib. Rib eye area is an indicator of muscling and is positively correlated with carcass yield grade.

c. Back Fat Thickness (FAT)

FAT EPD predicts differences for carcass fat depth over the 12th rib, as expressed in inches. FAT EPD is negatively correlated with carcass yield grade, however, FAT is positively related to a cow's ability to store energy for reproduction.

d. Marbling (MARB)

MARB EPD predicts differences for carcass marbling score as expressed in marbling score units. Higher marbling scores are positively correlated with higher carcass quality grades.

C. Data Collection and Reporting

The value differences in seedstock animals for the beef industry are directly linked to the genetic differences in those animals for traits of economic importance. The accurate evaluation of genetic differences in traits of economic importance is entirely dependant upon the collection and reporting of quality performance measures by breed association members.

1. All weights must be determined using a scale. These weights may be determined either by the owner or a manager, foreman etc. designated by the owner.

2. Calving Performance

a. Actual birth weights should be reported to help evaluate differences in calving ease and future growth potential of calves. Actual birth weights will be adjusted for age of dam by using additive factors derived from the latest available research results. An estimated birth weight is not acceptable. When an actual birth weight is not reported, the following Standard Birth Weights will be used for calculating Adjusted 205 Day Weights:

Males Females
89 lbs. 81 lbs.

b. Calving Ease Scores should be reported to help evaluate differences in direct and maternal calving ease:

- 1 = No Assistance
- 2 = Easy or Hand Pull
- 3 = Difficult or Mechanical Pull
- 4 = Caesarean Section
- 5 = Abnormal Presentation.

3. Pre-Weaning Performance

Measurement of Weaning Weight is used to evaluate differences in mothering ability of cows and differences in growth potential of calves.

- a. Acceptable Weaning Weights are those collected in the age range of 130 to 280 days of age. Weights taken outside this age range will not be adjusted and will not be used in performance ratio or EPD calculations.
- b. All calves within a weaning group should be weighed on the same day, when the average age of the group is as close to 205 days as possible.

4. Post-Weaning Performance

Measurement of Yearling Weight is used to compare animals for post weaning gain performance. Yearling Weight is also an indicator of the ultimate mature size of the animal.

- a. The period between weaning weight and final weight should be at least 160 days. The acceptable age range for adjusted 365-day yearling weight is 320 to 410 days. Weights taken outside this age range will not be adjusted and will not be used in performance ratio or EPD calculations.
- b. All calves within a yearling group should be weighed on the same day, when the average age of the group is as close to 365 days as possible.
- c. Yearling Weights are not mandatory but are an important component of proper bull development practices.

5. Carcass Performance

- a. Carcass measures may be collected on harvested progeny or through the use of ultrasound measures on live animals.
 - i. Only certified, highly skilled technicians should be retained for the collection and interpretation of ultrasound images.
 - ii. Image results must be reported directly to the BAA by the technician or lab responsible for the interpretation of the images.
 - iii. The acceptable age range for collection of ultrasound measures of carcass composition is 320 to 410 days (the same window as yearling weight). Measures taken outside this age range will not be adjusted and will not be used in performance ratio or EPD calculations.
- b. Requirements for submission of carcass harvest data can be obtained from the BAA office.

6. Other Performance Measures

The BAA offers BAA members, participating in the performance option, the opportunity to collect performance information for tracking multiple other traits of importance to beef seedstock production through www.braunvieh.org. For more information on any of the performance measures found on www.braunvieh.org, please contact the BAA office.

D. Contemporary Grouping

In the calculations of any weight ratios, only Braunvieh blood animals will be compared with other Braunvieh blood animals, no matter what other breeds are involved. The most effective contemporary groups include progeny from two or more sires. All simple weight ratios will be calculated within the following groups:

1. Within age groups of (90) days.
2. Based on percentage of Braunvieh blood:
 - a. Fullblood and Purebred Braunvieh cattle will be grouped together, separate from all Braunvieh Percentage animals

- b. All Braunvieh Percentage animals, regardless of breed makeup, will be grouped together.
3. Within each sex group, with no adjustments made for sex: B = bull, C = heifer, S = steer
 4. Within Feed Code groups: 1 = Own Dam Only, 2 = Own Dam Plus Creep, 3 = Bucket Fed or Foster
 5. Based on weigh dates:
 - a. Take weaning weights and measurements on all calves on the same day (when a majority of the calves are between 160 and 250 days of age), including as many calves in each contemporary group as legitimately possible.
 - b. Weigh all animals in a group before separating them, especially before separating show calves or bulls for a test station.
 - c. If the age spread of calves is greater than 90 days, choose two or more weigh dates, using as few as possible.
 - d. When calves are within an appropriate age range for each trait, record yearling weight, height, scrotal circumference, pelvic area, and ultrasound measurements on the same day.
 - e. If carcass data are to be collected on cull bulls, heifers, or steers, report weaning weights on all animals. These data allow selection of replacement females and bulls to be accounted for in genetic evaluations and help prevent bias in the predictions.
 - f. Do not weigh each calf individually as it reaches 205 days of age. Rather weigh each calf individually when calves in a group average approximately 205 days of age.
 6. Within breeder assigned management groups:
 - a. Use management codes to put a sick or injured calf into a single animal contemporary group if the illness or injury affected the calf's performance.
 - b. Use management codes to ensure calves receiving special treatment (show, bull test, and sale) are not included in the same group with those that did not receive an equal opportunity to perform.
 7. Within membership groups: On an optional basis, cattle owned by two or more members may be calculated together as contemporaries if they are raised together from birth within the same equal opportunity group, are so indicated at the time of application for registration and meet all other requirements to be considered contemporaries.

E. Adjustment and Ratio Calculations

1. Age of Dam Adjustments

A cow's age can have a negative effect on the expressed performance of her calf. To compare performance of all calves within a contemporary group on a mature dam equivalent basis, additive Age of Dam adjustments are used. Age of Dam adjustments are not made for calves reported as multiple births including twins and embryo transplants. Each multiple-birth calf is considered a single animal contemporary group.

Age of Dam	Birth	Birth	205 Day	205 Day
	Adjustments	Adjustments	Adjustment	Adjustment
	Male	Female	Male	Female
Up to 2 yrs, 9 mos.	7 lbs	6 lbs	63 lbs	53 lbs
2 yrs, 9 mos. to 3 yrs, 9 mos.	3 lbs	3 lbs	37 lbs	32 lbs
3 yrs, 9 mos. to 4 yrs, 9 mos.	2 lbs	1 lb	22 lbs	16 lbs
4 yrs, 9 mos. to 10 yrs, 9 mos.	No adjustment	No adjustment	No adjustment	No adjustment
over 10 yrs, 9 mos.	2 lbs	1 lb	22 lbs	16 lbs

2. Performance Ratios

Ratios refer to the performance of an individual relative to the average of all animals in the same group. A ratio of 100 means the animal is exactly average in its group. A ratio of 110 means it is 10% above average; a ratio of 90 means it is 10% below average. Official performance ratios for Braunvieh animals are computed by the BAA. Performance ratios are only valid within contemporary groups and are calculated as follows:

$$\frac{\text{Adjusted Measure of the Individual}}{\text{Average of the Adjusted Measures of the Group}} \times 100 = \text{Performance Ratio}$$

3. Birth Weight

Birth weights must be adjusted for age of dam influence for comparison.

$$\text{Actual Birth Weight} + \text{Birth Age of Dam Adjustment} = \text{Adjusted Birth Weight}$$

4. Weaning Weight

Weaning weights must be adjusted to a constant age of 205 days and for age of dam for comparison.

$$\left(\frac{\text{Actual Weaning Weight} - \text{Actual Birth Weight}}{\text{Weaning Age in Days}} \times 205 \right) + \text{Actual Birth Weight} = \text{205 Day Weight}$$

$$\text{205 Day Weight} + \text{Age of Dam Adjustment} = \text{Adjusted 205 Day Weight}$$

5. Yearling Weight

Yearling weights must be adjusted to an age constant basis for comparison.

a. Adjusted 365 Day Yearling Weight

$$\left(\frac{\text{Actual Yearling Wt} - \text{Actual Weaning Wt}}{\text{Number of Days Between Weights}} \times 160 \right) + \text{Adjusted 205 Day Wt} = \text{Adj 365 Day Yearling Wt}$$

b. Corrected Adjusted 365 Day Yearling Weight Ratio

Frequently in on farm testing, only the heavier calves in a weaning sex-management contemporary group are retained for a post-weaning gain test. When this occurs, the yearling weight ratios of the calves in the post-weaning contemporary group can be biased downwards, compared to what they would have been if the entire (unselected) weaning contemporary group had been tested. The following formula is used for calculating the corrected adjusted yearling weight ratio of on-farm tested animals to eliminate the bias due to culling of lower weight calves at weaning:

$$\frac{W + P}{W_u + P_s} \times 100 = \text{Corrected Adjusted 365 Day Yearling Weight Ratio}$$

Where:

W = adjusted 205-day weight of the calf

P = the post-weaning gain of the calf, calculated as 160 x post-weaning average daily gain

W_u = the average 205-day adjusted weaning weight of all calves in the calf's weaning contemporary group

P_s = the average post-weaning gain of all calves in the calf's post-weaning contemporary group.