By the Numbers

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Contemporary group basics

Contemporary groups are the cornerstone of genetic evaluation. They are the best way to account for environmental effects so that remaining differences among animals may be attributed to genetics, ultimately resulting in expected progeny differences (EPDs).

What is a contemporary group?

A contemporary group is a set of animals that have had an equal opportunity to perform: same sex, managed alike, and exposed to the same environmental conditions and feed resources.

Breeders make the call

The responsibility of proper contemporary grouping lies with the individual breeder. In most cases, calves born within a 90-day period on the same farm or ranch can be grouped together; however, consideration should always be given to the way the calves are managed and to their nutrition. In many cases, one contemporary group per sex is sufficient. However, within the same operation, differences can exist that require the establishment of two or more contemporary groups. Management and group codes may be helpful in these cases.

The management code designates whether calves were creep-fed or supplied supplemental feeding and separates them accordingly. Code 1 is for non-creep-fed calves, while code 3 is for creep-fed calves.

The group code is used to designate a set of calves managed differently from another set of calves. Calves from different groups or pasture units are designated by using a letter code, such as A, B, C or D. Orphaned or extremely sick calves should be assigned a separate group and should not be compared against their normal herdmates.

Breeders submitting weaning weights also have the option to have heifers and bulls (or steers) treated and ratioed as separate-sex groups or treated as an entire calf crop, with males and females adjusted to a bull basis and ratioed as one group. Group codes can be used to separate the sex groups of calves if desired. If the Performance Programs Department is not instructed differently, each weaning group is treated as one unit for calculating ratios.

Data submitted falls under various contemporary grouping criteria once it reaches the American Angus Association. Contemporary groups for natural calves are separated by whether the dam is a registered Angus or commercial female. Embryo transfer (ET) calves are not grouped with natural-born calves. At weaning, ET calves from registered Angus recipient females are assigned to a separate group from ET calves out of other recipient females. Any irregular, foster or outlier calves are placed in a separate group.

Too much grouping is not a good thing

Some breeders create too many contemporary groups, since they may not be aware of the various factors that can split calves into these groups.

The example below illustrates overgrouping. The performance data on 21 bulls were submitted in numerous groups to the Association. In visiting with the breeder, the bulls were actually weighed on the same day and managed as a group. The breeder thought that because the calves were weighed on the same day, they would be grouped together as the weights were submitted to the Association. Calves are grouped by the date on which the records are processed at the Association (process date/lot ID). In this example, all the bull calves belong in one group of 21 head, which is more informative as a contemporary group for genetic evaluation.

Table 1: Illustration of overgrouping[a]

Actual process date	Lot ID	Bulls
10/21/04	1	2
07/23/04	1	1
06/14/04	3	3
05/17/04	1	4
05/13/04	4	2
04/21/04	1	1
04/19/04	3	1
10/13/03	4	7
Ideal process date	**Lot ID**	**Bulls**
10/13/03	4	21

[a]Weigh date and management codes were the same.

In other cases, breeders may fail to break a large set of calves into different contemporary groups when the assignment is needed to allow for unequal treatment or an exception.

A typical plan is to take weights and measurements on all calves on the same day and to include as many calves in the contemporary group as possible. Then, the management and group codes can be used to specify known group differences.

Three example group code applications follow:

- Calves from 2-year-old dams in one pasture may be reported as Group A, while calves from mature cows in another pasture are Group B.
- Bull calves from 2-year-old dams may be Group A. Heifer calves from 2-year-old dams may be Group B. Bull calves from mature cows may be group C, and heifer calves from mature cows may be Group D.
- The entire calf crop is reported as Group A, but an orphaned calf is placed in Group B, and a chronic sick calf is placed in Group C.

Each of the categories above will be a separate contemporary group for comparative purposes as indicated by different lot identification (Lot ID) in the upper left-hand corner of the Beef Improvement Record (BIR) "Sire Summary" sheets.

Heifers managed with cows

Many breeders group the calves out of 2-year-old dams as a separate group code as depicted in the previous example. This is typically done because the heifers received preferential treatment from the cows. Unique treatment may be feeding supplement to the heifers or managing them in a better environment, such as grazing them on improved pastures. If breeders take such an approach, the heifers are definitely a separate management scheme and should be grouped separately from the cows in production.

There are cases where breeders manage the heifers and cows under fair competition with no preferential treatment. If this approach is followed in the strictest sense for their production cycle, then the EPDs

Grouping guidelines

Contemporary group:
A set of calves (two or more) that are the same sex, managed alike and exposed to the same environment.

What splits calves into separate contemporary groups?

- ►Management codes (creep vs. noncreep)
- ►Group codes
- ►Weaning dates more than three days apart
- ►Location codes
- ►Registered vs. commercial dams
- ►Natural vs. embryo transfer (ET) calves, registered Angus vs. other recipients
- ►Submitting at different times data on calves that could be in the same contemporary group [using paper forms, AAA Login carts or Angus Information Management Software (AIMS) files]. Sending data on calves at later dates than their other contemporaries causes unwanted groups to be formed. These calves will not be joined with the previously submitted calves.

are a valuable comparison regardless of the cow ages represented in the group. As with all the calf weaning weights, age of dam adjustment factors are used to put females on an equal age basis to remove this nuisance environmental variation when calculating the genetic predictions.

Contemporary groups, ratios and EPDs

Contemporary grouping allows animals to be evaluated on how well they performed compared with their herdmates raised under similar environmental conditions. This grouping accounts for environmental or unequal treatment effects, so that heritable differences, such as EPDs, can be predicted.

Two or more animals of the same sex are necessary in the contemporary group for an EPD to be calculated, assuming other data edits are met. Each animal is compared relative to the average performance of the contemporaries in the defined group. You cannot have EPDs beyond a pedigree index interim EPD without contemporary groups. A contemporary group of one animal does not provide any information to compute EPDs from the Association's National Cattle Evaluation (NCE).

For example: There are 10 bull calves weaned at your farm or ranch (treated alike, same sex, fed/managed the same). The bulls form one weaning contemporary group. Then, you send two calves to the bull test station and feed out the remaining eight at home. Their yearling and ultrasound records will be processed as two separate contemporary groups, not as one. If you send one bull to a test station, this creates a contemporary group of one for the yearling and ultrasound data. Association ratios for these traits will be 100, and the animal's own yearling and ultrasound performance will not be used in evaluation procedures for EPDs.

A ratio is the performance on an individual animal relative to the average performance for his or her contemporaries. Contemporary groups should include as many animals as can be accurately compared.

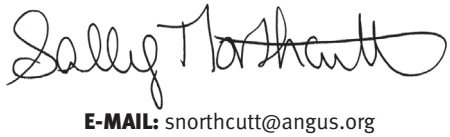
Continuing our example, say the 10 bull calves at weaning weighed an average of 600 pounds (lb.). One calf weighed 630 lb., so he is 5% above the average of his contemporaries. His ratio is 105.

$$\text{Ratio} = (630 \div 600) \times 100 = 105$$

Another calf weighed 570 lb., which is 5% below the contemporary group average of 600 lb. His ratio is 95.

$$\text{Ratio} = (570 \div 600) \times 100 = 95$$

In the calculation of EPDs, the animal's own record (a weight or measure) is used relative to the contemporary group's average performance. It is sometimes a misunderstanding that the numerical ratio (like the ratio computed above) is used in the computations. Ratios can be a within-group tool; however, the use of more advanced selection tools, like EPDs, provides comparisons among all animals in the breed with greater accuracy.



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Editor's Note: *"By the Numbers" is a column by Association performance programs staff to share insights with Angus members about data collection and interpretation, the National Cattle Evaluation (NCE), genetic selection, and relevant technology and industry issues. If you have questions or would like to suggest a topic for a future column, contact Sally Northcutt, director of genetic research, or Bill Bowman, director of performance programs, at 816-383-5100.*