



# By the Numbers

► by **Sally Northcutt**, director of genetic research, American Angus Association

## The importance of good contemporary grouping

*Admittedly, contemporary grouping is not a very exciting topic to read about. But when one of the American Angus Association's Angus Herd Improvement Records (AHIR<sup>SM</sup>) technicians tells you your bull does not have expected progeny differences (EPDs) because he's from a contemporary group of one, the subject becomes much more top of mind to you. As a breeder, your contemporary grouping of calves for genetic evaluation is important and worth reviewing.*

### By definition

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. Appropriate grouping is the best way to account for environmental effects so remaining differences among animals may be attributed to genetics, ultimately resulting in EPDs. If the calf of interest has no contemporaries to which to compare his performance, then his individual record has no value for 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 data on calves that could be in the same contemporary group at different times [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.

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, differences can exist within the same operation that require the establishment of two or more contemporary groups. Management and group codes may be helpful in these cases. Specific details on management and group codes can be found at [www.angus.org/performance/documents/contemporary\\_grp.html](http://www.angus.org/performance/documents/contemporary_grp.html) or in the May 2005 *Angus Journal* "By the Numbers" column.

### Submit all weights

All the calves need to be reported with

weights and measures to best define the genetic potential of the animals in the contemporary group. It is a misconception that turning in performance measures on the best calves and not completely reporting all calves is an advantage. The example in Table 1 illustrates this misconception using adjusted 205-day weights on 10 bull calves in a contemporary group.

In the first case, the deviation of all 10 calves is given from the group average of 625 pounds (lb.), along with their individual ratios based on this group average. Now in the second case, if only the highest-ranking calves had been reported, then the average for those calves would be 675 lb. The heaviest calf in this case only differs from the average by 67 lb., instead of 117 lb. in the first case of 10 calves.

The example illustrates that when data are submitted only on selected calves, future decisions based on these results can be flawed.

### Too many, too few

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

**Table 1: Weaning weight contemporary example**

| Calf ID                         | Adj. 205-day wt., lb. | All calves reported |            | Top half reported |            |
|---------------------------------|-----------------------|---------------------|------------|-------------------|------------|
|                                 |                       | Deviation           | Ratio      | Deviation         | Ratio      |
| 1                               | 524                   | -101                | 84         |                   |            |
| 2                               | 562                   | -63                 | 90         |                   |            |
| 3                               | 578                   | -47                 | 93         |                   |            |
| 4                               | 605                   | -20                 | 97         |                   |            |
| 5                               | 606                   | -19                 | 97         |                   |            |
| 6                               | 639                   | 14                  | 102        | -36               | 95         |
| 7                               | 643                   | 18                  | 103        | -32               | 95         |
| 8                               | 655                   | 30                  | 105        | -20               | 97         |
| 9                               | 694                   | 69                  | 111        | 19                | 103        |
| 10                              | 742                   | 117                 | 119        | 67                | 110        |
| <b>Avg. deviation and ratio</b> |                       | <b>0</b>            | <b>100</b> | <b>0</b>          | <b>100</b> |
| <b>Avg. weight</b>              |                       | <b>625</b>          |            | <b>675</b>        |            |

Source: Beef Improvement Federation Guidelines, 2002.

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.

A useful contemporary group size is 10 or more animals of the same sex, born within a 90-day period, and weighed within a three-day window. For example, calves weighed on Monday, Tuesday and Wednesday can be included in the same group. Calf weaning weights outside the three-day window are assigned to a different contemporary group. It is important to note that sexes are separated in the calculation of interim EPDs and for National Cattle Evaluation (NCE) EPDs.

Table 2 illustrates over-grouping. 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

**Table 2: Illustration of over-grouping<sup>a</sup>**

| <u>Actual process date</u> | <u>Lot ID</u> | <u>Bulls</u> |
|----------------------------|---------------|--------------|
| 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            |
| <u>Ideal process date</u>  | <u>Lot ID</u> | <u>Bulls</u> |
| 10/13/03                   | 4             | 21           |

<sup>a</sup>Weigh date and management codes were the same.

group of 21 head, which is more informative as a contemporary group for genetic evaluation.

### **Guidelines for grouping**

Angus contemporary groups are defined beginning at weaning. The number of animals in a contemporary group never increases after weaning. The number of contemporaries either stays the same or becomes fewer as animals are separated from each other for management reasons. Contemporary groups cannot be recombined after herdmates are separated from their defined weaning groups.

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 the 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 NCE. (For details on interim EPDs, see [www.angus.org/performance/documents/interim\\_epd.html](http://www.angus.org/performance/documents/interim_epd.html) or the April 2005 *Angus Journal* "By the Numbers" column.)

Animals weighed as yearlings are always grouped in the same manner as they were at weaning. This occurs for two reasons:

- ▶ First, it accounts for bias due to culling or selection at weaning.
- ▶ Second, it accounts for bias due to management and nutrition at weaning.

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Sexes are also separated at yearling time. Ultrasound measurements are also taken, and the animals are grouped from the weaning contemporary group, with additional breakdowns of the groups for management differences made at the time of scanning.

### Classic examples for yearling data

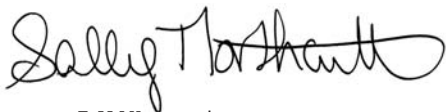
Consider the following example.

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 (a group of eight bulls, and a group of two bulls), not as one.

If you only send one bull to a test station, this creates a contemporary group of one for the yearling and ultrasound data. The animal's own yearling and ultrasound performance will not be used in evaluation procedures for EPDs. Since none of his weaning contemporaries were at the test station, no comparisons can be made using his own performance records for the Association's EPDs.

Keep in mind that most bull tests have test station rankings that compare all bulls in a particular test group for traits such as yearling weight, average daily gain (ADG) and ultrasound. These comparisons are not used in EPD calculations. The contemporary grouping used for EPDs at the Association traces back to the breeder's weaning contemporary group.

Contemporary grouping is more important than we give it credit during daily operations. If you have questions, or want to work through an exception, please contact the Performance Programs Department, at (816) 383-5100, for more details.



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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.