The IMPORTANCE of *Contemporary Groups* in Breeding Value Estimation

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If a group of comparable animals were exposed to the same environment, differences between them are caused by genetics.

The principle of contemporary groups is used in breeding value estimation to indicate whether differences in performance can be attributed to environmental or genetic effects. The contemporary group is a group of similar or comparable animals that were exposed to the same environment, and the correct composition there-of is one of the cornerstones of BLUP breeding value estimation. Should animals exposed to different environments be evaluated in the same contemporary group, the animals in the better environment will tend to have a better performance and therefore higher breeding values, as environmental effects will be attributed to genetics. It is therefore important to identify animals that were exposed to the same environment, or alternatively, place animals in a different group if their performance were differently affected by the environment than their group mates. This is however not as complicated as it sounds, especially if the breeder keeps the following principles in mind:

1. Place animals that were at the same time, place and treatment in the same group

A contemporary group is a comparable group of animals measured at the same time in the same environment, for example a group of weaner calves of the same age (born between 100 days of each other), weighed on the same date on the same farm. It is therefore a comparable group of animals that were together on the same farm or camp in the same year and season. If there are some animals in the group that were treated differently, they should be given a separate treatment code because their performance is influenced by other environmental influences than the rest of the group. Examples of possible different treatments are when some animals received supplements or creep feed, sale or show animals, embryo donors, sick or foster calves or even cows and calves purchased from another farm. Corrections for sex, age of calf and age of dam are automatically made during breeding value estimation, as this information is available from performance recording, and therefore need not be taken into account by the breeder.

2. Animals should be the progeny of at least two sires, of which one is a link sire

The progeny of different sires needs to be compared in the same group in order to determine the sires' genetic merit relative to each other. At least one sire should be a link sire with progeny in another herd. Genetic links between herds are used to determine the ranking of sires in the breed and therefore AI sires are good link sires. Smaller herds that only use one bull could artificially inseminate some cows or allow some cows to be covered by another herd's bull, to improve linkages to other herds.

3. Larger groups stabilise Breeding Values

Larger groups result in more accurate and stable breeding values, as the mean and distribution of the group can be more accurately determined and are thus more representative. Weigh all the animals in the same group on the same day, as corrections for age differences are made during genetic evaluation. The use of breeding seasons rather than through the year calving will also increase contemporary group size, simply because more calves are born closer together.

One of the important cornerstones of breeding value estimation is performance relative to contemporary group average. Groups with only one or two animals are therefore not included in breeding value estimation, as one animal in a group will always be average, and with two animals, one will be above and the other below average. These small groups do not make a contribution and are therefore not included. Although contemporary groups should preferably have at least 5 animals and be the progeny of more than one sire, larger groups are better. Larger groups are more resilient for accidental mistakes.

4. Measure all animals in the contemporary group

It is also important to weigh all animals in the contemporary group, especially the genetically poor performers that are culled. Weighing poorly performing animals before they are culled, will penalize their parents for their poor breeding ability and will be a more accurate reflection of real genetic ability. It will also accurately indicate the higher-than-average performance of the rest of the group. Genetic merit of all animals in the group and their parents are then accurately reflected in their breeding values.

Conclusion

Placing animals in contemporary groups should not be a complicated process. Place animals differently affected by the environment for some reason in another group. It is an essential tool to level the playing field so that environmental effects are not confused with genetic effects.