Small Herds: Obtaining Effective Results from BREEDPLAN

TIP SHEET

Herd size varies considerably between breeding operations and as such a common query is *"What size herd do you need to obtain effective results from BREEDPLAN?".* While BREEDPLAN does not have a minimum herd size requirement, there are a number of factors that will influence whether a herd can collect performance data that can be used effectively in the BREEDPLAN analysis. This tip sheet outlines how beef breeders of smaller herds can maximise the usefulness of data that they collect for BREEDPLAN.

Although the BREEDPLAN analysis is a very complex analytical model, on a basic level it directly compares the performance of an animal with the performance of other 'similar' animals in the same 'contemporary group'. BREEDPLAN then uses 'genetic linkage' to compare animals across different contemporary groups both within the individual herd and across the entire breed.

Calves will be analysed in the same contemporary group if they:

- Were bred in the same herd,
- Were born in the same calving year,
- Are of the same sex,
- Are of the same birth number (i.e. single calves not compared with twins),
- Are of the same birth status (i.e. natural/AI calves are not compared with ET calves),
- Have been measured on the same day (and have the same measurement history),
- Are of similar age (typically age slicing is 45 days for birth and 200 day weight and 60 days for 400 and 600 day weight), and,
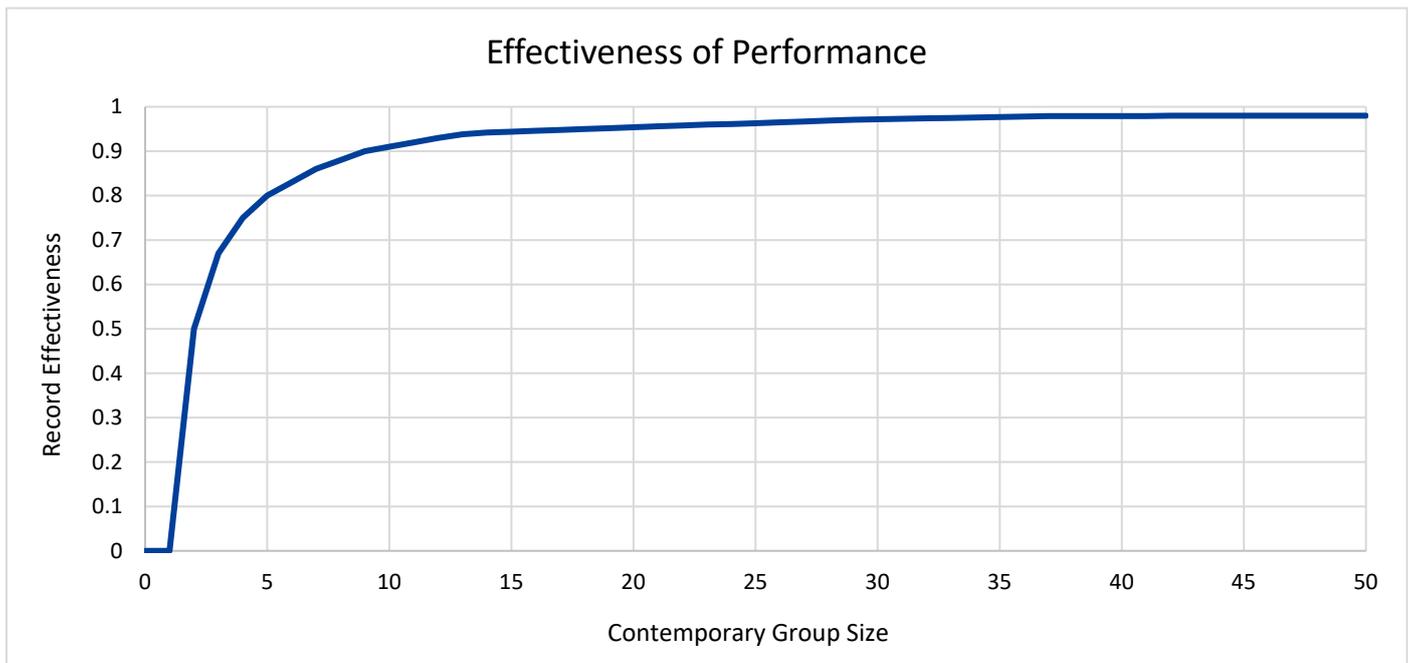- Have been run under the same conditions (i.e. animals are in the same breeder defined management group).

Where there is only one animal represented in a contemporary group, there are no other 'similar' animals to which it can be directly compared and thus the performance submitted for it will not be used in the BREEDPLAN analysis. Therefore, smaller herds must try to ensure there are at least two animals that meet these criteria so that the performance records of their animals can be used effectively in the BREEDPLAN analysis.

The effectiveness of an animal's performance record increases as more animals are represented within each contemporary group. The effect of contemporary group size on the effectiveness of performance is illustrated in the graph on the following page.

As illustrated in the graph, the greatest increase in effectiveness is observed going from one animal to two animals in a contemporary group. That is, a record in a single animal contemporary group is not effective while a performance record in a contemporary group of two is 50% effective. Once five to ten animals are represented in a contemporary group, the increase in effectiveness diminishes quite rapidly with increasing group size. However, the general aim for all herds should be to maximise contemporary group size.

There are a number of strategies that breeders can use to ensure they maximise the number of calves included within each contemporary group, maximise the effectiveness of each record and subsequently maximise the results they obtain from their BREEDPLAN recording. Although these strategies are of particular importance to smaller herds, they should also be considered by larger herds as a means of fine tuning their performance recording. These strategies are described on the following pages:

Effectiveness of Performance

A chart titled "Effectiveness of Performance" plots Record Effectiveness (y-axis, 0 to 1) against Contemporary Group Size (x-axis, 0 to 50). The curve rises steeply from 0 at group size 1 to about 0.8 at size 5, then gradually approaches 1 as group size increases.

1. **Restricted calving periods**

   As calves are only included in the same contemporary group if they are born within 45 or 60 days of one another, it is essential that small herds have as short a calving period as practical. A calving period of six to eight weeks is ideal.

2. **Run all calves under the same management conditions**

   Where possible, all calves should be run under the same management conditions. If calves are to be split into different groups for management purposes, it is useful to weigh the whole group before it is split. For example, 200 day weights can be collected when calves are aged between 80 and 300 days, allowing you to collect a weight on all calves prior to culling a subset, or weigh all male calves before a portion are castrated.

3. **Measure all animals on the same day**

   As BREEDPLAN will only directly compare the performance of animals that has been recorded on the same day, it is important to collect performance measurements (e.g. 200 day weights) for all animals in the mob on the one day.

4. **Inclusion of commercial/unregistered animals**

   Many breeders have a small stud herd that they run in conjunction with commercial animals. If you have a commercial herd of similar breed content to your stud animals, it may be possible to record these commercial animals with the relevant breed society for genetic evaluation purposes. The advantage of doing so is that this allows a greater number of animals (stud and commercial) to be included in the contemporary group. Please note that this option is only available for some societies, subject to relevant regulations.

5. **Associated Herds**

   In the situation where two herds run and manage their animals together on the same property, BREEDPLAN can associate the two memberships to allow the performance of calves in both herds to be directly compared together.

6. **Use more than one sire**

   More than one sire should be used in any joining program. BREEDPLAN requires at least two sires to be represented in each contemporary group if the performance of the progeny is going to contribute to the calculation of EBVs for their sire. Where AI programs are used they should be timed so that calves by AI sires are born at the same time as calves by sires used in natural joinings.

7. Supply recipient dam details

Herds that use embryo transfer need to identify at least the breed and age of the recipient dams of ET calves. If the breed of recipient dams is not supplied ET calves are split into single animal analysis groups and therefore their own performance cannot be used to maximise the analysis of ET calves by BREEDPLAN, it is preferable if the recipient dams used are all the same breed.

For further information on how smaller herds can make the best use of BREEDPLAN, please contact staff at your BREEDPLAN processing centre.