

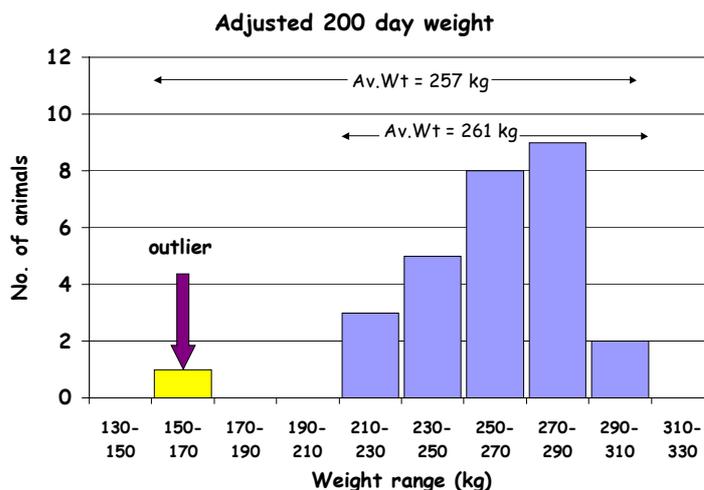
Understanding “Outliers”

Although BREEDPLAN does not oversee or audit the on-farm collection of performance data, several data checks are carried out on the performance information when it is received at the BREEDPLAN office. One of these checks is the identification of “outlier” records.

1. What is an Outlier?

Every time a BREEDPLAN analysis is run, the variation between the performance information of animals within each contemporary group is examined. If correctly formed, each contemporary group will only include animals of similar type that have had equal opportunity to perform under similar conditions. While a certain degree of variation in performance is expected within each contemporary group, when the difference between a performance record for an animal and the average of all animals in the contemporary group is much greater than we would normally expect for the trait measured, the record for this animal is identified as an “outlier”.

An example of an outlier record is provided in the table below.



For statistical enthusiasts, a performance record will be identified as an outlier if it is more than 3 phenotypic standard deviations from the average of the group (after adjusting for age at measurement & age of dam).

2. Why does BREEDPLAN check for Outliers?

The identification of outlier records in the BREEDPLAN analysis is aimed at highlighting potential data recording errors that may have occurred.

Outliers may occur for a variety of reasons. For example :

- ❑ Incorrect measurements may have been recorded (eg. transcription errors, data collection errors, data entry errors)
- ❑ Incorrect animal details may have been recorded (eg. date of birth, sex)
- ❑ Animals may have been placed in an incorrect contemporary group
- ❑ Animals may be significantly genetically superior/inferior to their contemporaries.



3. What happens to Outlier records?

Once an outlier record has been identified, a report is sent to the owner of the animal asking them to check the performance record in question. How the owner responds to the outlier report then determines what happens to the outlier record.

- ❑ If the owner checks the outlier record and discovers an error has occurred, the record will be corrected and the updated performance included in future BREEDPLAN analyses.
- ❑ If the owner checks the outlier record and concludes that the record is correct and the animal is simply genetically inferior/superior, the outlier record will be verified on the BREEDPLAN system and included in future analyses.
- ❑ If the owner does not correct or verify the outlier record with BREEDPLAN, the record will be removed from all future GROUP BREEDPLAN analyses.

4. What should members check upon receipt of an Outlier Report?

When investigating an outlier record, members should check:

- (i) The performance information has been correctly recorded
 - ✓ Is the measurement correct?
 - ✓ Is the measurement date correct?
 - ✓ Does the measurement refer to the correct animal?
- (ii) The animal details have been correctly recorded
 - ✓ Is the sex of the animal correct?
 - ✓ Is the date of birth of the animal correct?
 - ✓ Are the sire and dam of the animal correct?
 - ✓ Is the birth number of the animal correct? (ie. twin vs single)
 - ✓ Is the birth status of the animal correct? (ie. ET vs natural)
- (iii) The animal is being analysed in the correct contemporary group
 - ✓ Has the animal had the same opportunity to perform as the other animals in the contemporary group?
 - ✓ Has the management group information been correctly recorded?
 - ✓ Has the animal been sick or injured?
 - ✓ Has the animal received preferential treatment? (eg. been prepared for show/sale)
 - ✓ Has the dam of the animal received preferential treatment? (e. been prepared for show/sale)

It is important to remember to contact BREEDPLAN once you have checked the outlier report. Remember, if you do not correct or verify the outlier record with BREEDPLAN, the record will be removed from all future GROUP BREEDPLAN analyses.

For more information regarding Outliers, or assistance in the interpretation of an Outlier Report, please contact staff at BREEDPLAN.