NZ Herefords
The white face advantage

New Zealand Hereford– DNA Procedure Policy

1. **Parent Verification Result Process:**

   1.1. Parent verifications are tested when requested. Parent verifications are not possible when a parent and the calf are on different DNA testing platforms (MiP vs SNP) or if the parent has not been DNA tested.
   1.2. Parent Verification results are returned to PBBnz, identifying if an animal has been qualified or excluded as a parent.
   1.3. Parent Verification results are automatically updated on the Herefords Database.
   1.4. If TREE confirms a discrepancy exists between the recorded pedigree of the animal and the genetic pedigree of the animal, then the **owner of the sample** is contacted by PBBnz/NZH staff, with email confirmation provided and regulations 3a onwards will be enforced.

2. **Quality Checks for Single Step Evaluation including Parent Verification:**

   2.1. Genotypes from the DNA testing process are included into the Tran Tasman Single Step evaluation. These are all compared to each other, and genetic linkages are established. E.g. how closely an animal is related to another.
   2.2. As a result of the quality checks prior to Single Step evaluation, incorrect parentages are identified.
   2.3. NZH receive a monthly diagnostic report of any animal which failed the quality checks (QCs) prior to being submitted to Single Step, with an incorrect parent (sire or dam).
   2.4. If a parent/sire verification result which is returned from the monthly diagnostic report, supplied by AGBU/ABRI, conflicts with the current sire/dam recorded for that animal, NZH (the company) will then run the results through TREE.
   2.5. If the second test through TREE confirms the PV result from the diagnostic report, then the **owner of the sample** is contacted by PBBnz/NZH staff, with email confirmation provided, and advised that a discrepancy exists between the recorded pedigree of the animal and the genetic pedigree of the animal. The following regulation will be enforced:

3. ***(a)*** *In cases where the genomic data indicates a required amendment to an animal's pedigree record, the owner and breeder of the animal will be provided with 14 days' notice of the intended amendment, during which time evidence can be provided to controvert the intended amendment.*

   3.1. If the owner of the sample accepts the proposed pedigree change, NZH/PBBnz will change the pedigree of the animal as recorded on internet solutions and the status for parent verification will be changed to 'verified'.
   3.2. If the owner of the sample does not accept the proposed pedigree change or if there is no alternate parent identified, then further testing is required before changing the pedigree of the animal and the status for parent verification will be displayed as 'not verified' for a maximum of six months, after which it will default to "failed" until further notice

4. Procedure for further testing of an animal if the proposed pedigree change is not accepted:

4.1. A second DNA sample from the animal must be supplied. For live animals, this must be tissue in the form of tissue sampling unit (TSU). For deceased animals, another sample of DNA must be supplied.This sample will be verified against the parent in question.

4.2. If the proposed parent is confirmed by further testing, then the animal's pedigree will be amended to reflect the genetic pedigree and the parent verification status changed to "verified".

5. Procedure for further testing if Parent is not identified:

5.1. If the animal is no longer alive then a secondary batch of DNA must be tested to confirm or exclude the sire and or dam.

5.2. If the animal is no longer alive, and the owner of the animal is unable to provide further samples for testing then New Zealand Hereford (NZH) has the authority to change parent verification status from 'not verified' to 'failed'.

5.3. If further testing fails to identify an alternate parent, or if no further testing was possible, then the following regulations are enforced:

(b) *Where genomic data suggests unresolved discrepancies in the recorded sire, dam, sex or genetic condition status of an animal born prior to 1 January 2018 the recorded information and the animal's registration status will remain unchanged; and the parent verification status will be "not verifiable".*

(c) *Where genomic data suggests unresolved discrepancies in the recorded sire, dam, sex or genetic condition status of an animal born after 1 January 2018 the suspected incorrect information will be removed from the database and the animal's registration status will be revoked until the discrepancies are resolved with the status changed to "Failed".*

6. **Parent Verification Status of Animals:** The following verifications will be applied to an animal's details to identify what level of DNA verification has occurred:

6.a. **Verified** – The sire/dam has been DNA Verified as correct (If a sire or dam is NOT excluded from the QCs prior to Single Step then for registration purposes NZH will consider that sire or dam to be correct unless any further testing proves otherwise).

6.b. **Not Verified** - The animal is not DNA verified to its pedigreed parent and re-testing has commenced as per the NZH DNA Policy.

6.c. **Not Verifiable** - If the animal is born prior to 1 January 2018 and has been DNA tested however the listed sire/dam is not DNA verified and no further re-collection and testing of DNA samples is possible in accordance to the Company's DNA Testing Policy.

6.d. **Failed** - The animal has failed DNA verification to the sire/dam after re-testing in accordance to the Company's DNA Policy.

6.e. **Not tested** - The animal has not been verified to sire or dam using DNA Verification

7. **Hierarchy of Parent Verification:** New Zealand Hereford acknowledge that there is a hierarchy of accuracy for parent/sire verification as follows:

   7.a. High Density (150,000 SNP)
   7.b. Low Density (50,000 SNP)
   7.c. uLD (30,000SNP)
   7.d. SireSeek (500 SNP)
   7.e. SEQ1 (100 SNP)
   7.f. MiP (21 MiP markers)
   7.g. Provided Pedigree
   7.h. As a result, there are very limited times when pedigrees as confirmed by lower status tests could vary to tests from higher accuracy. New Zealand Hereford will always use the highest accuracy test available.

8. **Company Approved DNA Laboratories:** As per the New Zealand Hereford rules, the Company reserves the right to only accept DNA/Genetic/Genomic test results from company approved laboratories. The following laboratories are currently approved by NZH:

   8.a. Neogen Australasia Pty Ltd, Gatton, Queensland, Australia

   8.b. Genomnz NZ, Mosgiel, New Zealand