New Zealand Genetic Evaluation (NZGE) upgrade (V5) - 2023

Technical Note

Subject:	**NZGE genotype inclusion criteria changes (Version 5)**
Relates to:	NZGE genomic breeding values, NZGE genotype inclusion
Date:	October 2023 – updated Feb 2024

Summary

- The NZGE has been upgraded and the new version (V5) is available in SIL and nProve from 01 September 2023.
- The NZGEv5 includes improvements to BV and Index accuracy for Survival, Meat, WormFEC and Methane for genomically-tested animals.
- Genotype inclusion criteria for restricted Goal Trait Groups, including Methane and Meat Yield, has been adjusted.

Background

The New Zealand Genetic Evaluation (NZGE) has been upgraded a result of recent NZGE population validation testing. NZGEv5 includes improvements to BV and Index accuracy for Survival, Meat, WormFEC and Methane for genomically-tested animals (or animals closely related to genomically-tested animals). Minor changes to some flock values are expected, due to the improved accuracy.

The genotype inclusion criteria for the Methane and Meat Yield Goal Trait Groups have been adjusted to include Alive/Transferred animals up to 2 years of age (from previous restriction of 1 year or less).

NZGE V5 genotype inclusion criteria

An animal must meet all the following genotype, breed, and pedigree criteria for its genotype to be included in the NZGEv5 evaluation.

Genotype

- The animal has a genotype loaded to SIL by a B+LNZ Genetics approved lab and,
- The genotype meets the genotype QC criteria.

Breed

- The animal has a SIL breed of ≥ 75% Texel, Romney, Coopworth or Perendale, or,
- The animal has a SIL breed of Composite with >30% Romney, Coopworth or Perendale, or,
- The animal has a SIL breed of Composite with >30% Texel *and* > 40% Romney, Coopworth or Perendale (or composite) background.

Pedigree Status

- The animal has at least one recorded or DNA assigned parent.

Goal Trait Group records

Note - Genotype inclusion criteria are examined separately for each Goal Trait Group (GTG).

An animal's genotype will be included in the GTG analysis if the above Genotype, Breed and Pedigree Status criteria is met and:

- The animal is a sire and was born after 2011 or,
- The animal is a dam and is 6 or less years old or,
- The animal has a SIL status of Alive/transferred and is less than 2 years old (birth month of August is assumed i.e., in November of 2023 animals born in 2022 and 2023 will be included).

Additional Genotype Inclusions

For animals that are not a sire, dam or young animal, some additional genotypes are included if they have informative phenotypes for production traits and/or expensive to record phenotypes, as detailed in Table 1. below.

Table 1. Additional Goal Trait Group genotype inclusion criteria

Goal Trait Group (GTG)	Inclusion Criteria
Facial Eczema	GGT21 recorded
WormFEC	At least 2 of the following traits recorded: FEC1, NEM1, FEC2, NEM2 or AFEC
Resilience	DRAGE recorded
CarLA	CarLA recorded
Body Condition Score	BCS recorded
Methane	PACCH4 or PACCO2 recorded
Meat Yield	At least 3 of the following traits recorded: FDM, EMD, EMW, CTLEG, CTSHLD, CTLOIN, CTFAT, CWTC, CBUTT or any VIASCAN
Meat Quality	CMARB, SHF or COLA24 recorded

Restricted Goal Trait Groups

The genomic enhancement of BVs listed in Table 2. will be limited to animals born into flocks that have recording access to the restricted GTG. This may result in transferred animals (e.g. external sires) not getting genomically enhanced BVs for predictor traits recorded in their current flock.

Table 2. Restricted GTGs that require birth flock access for genomically enhanced BVs.

Goal Trait Group (GTG)	Breeding Value (BV)	Predictor traits
Methane	PACCH4, PACCO2	PACCH4, PACCO2
CarLA	CarLA	CARLA
Resilience	DRAGE, RGAIN	LWD, DRENCH

The Genotyping decision tree is an additional resource outlining criteria for enhanced breeding values and is available from the SIL website https://www.sil.co.nz/technical/technical-notes.