

Methane BV units and Interim Methane Index

SIL Technical Note

Subject: **Methane BV (CH₄gBV) and sub-index**

Relates to: Production, methane efficiency

Date: October 2023

Summary

- CH₄gBV units are currently grams of methane emitted per day for an ~ 8 month old hogget in a PAC chamber that has been removed from grass for 1-7 hours.
- Methane is in absolute units so it will be closely related to feed intake – if used in isolation then lower methane animals will also tend to be lower feed intake and lower production.
- **The desired outcome is high production animals with reduced methane emissions. To achieve this, methane should be used as a sub-index in conjunction with NZMW or the appropriate MW+ combination that reflects the flocks breeding objective.**
- The interim Methane sub-index is DPaCH₄i = -341 x CH₄gBV
 - DPaCH₄i = Dual purpose absolute methane interim index
 - CH₄gBV = Methane breeding value
- The Methane BV units and index are likely to change to methane yield (methane per kilogram of feed eaten) in future, but the above approach will select a similar set of animals, therefore the direction of travel will be similar.

Introduction

The Methane BV is currently in units of grams of methane emitted per day for an ~8 month old hogget measured in a PAC chamber that has been removed from pasture 1-7 hours before measurement, and is not adjusted for any other production parameter. A lower BV indicates lower absolute methane production.

As the Methane BV is the absolute or gross amount of methane, it will be highly related to feed intake. This means that you SHOULD NOT just look for low Methane BV animals, as they will tend to be the smallest animals with lower food intake and potentially lower productivity.

Methane sub-index

An interim index for methane has been set up in SIL and nProve as a custom index until a methane yield breeding value is available. The long term value of carbon is difficult to determine, so a “desired gains” approach has been taken. In this case, outcomes of various index weightings are

assessed and a weighting selected that gives an appropriate balance between methane reduction while still making near maximum gains in other productive traits.

This approach was suggested by AgResearch, and work conducted by AbacusBio and B+LNZ Genetics' science team has reviewed the outcome and are satisfied that it represents an appropriate weighting.

Dual Purpose absolute Methane Interim Index (DPaCH4i) = -341 x CH4gBV

Selection of methane efficient animals

The ideal selection candidates are animals with high productivity and lower-than-average methane output. This is achieved through using the methane sub-index in conjunction with a combined productivity index (e.g. NZMW), and selecting animals with high NZMW and lower Methane sub-index or PACCH4gBV.

By doing this you will be balancing the downward pressure on lowering methane with upward pressure on improving production traits, and it will take your flock in a favourable and balanced direction of travel.

Future refinements

In the medium term the intention is to change the basis of the BV so that it is in units of methane emitted per kg DM intake (probably as a percentage reduction).

In the meantime, the interim approach using the methane sub-index in conjunction with the appropriate MW index recommended above, will be selecting a similar set of animals and therefore the direction of travel will be similar – there is still benefit in using the figures as they exist currently.