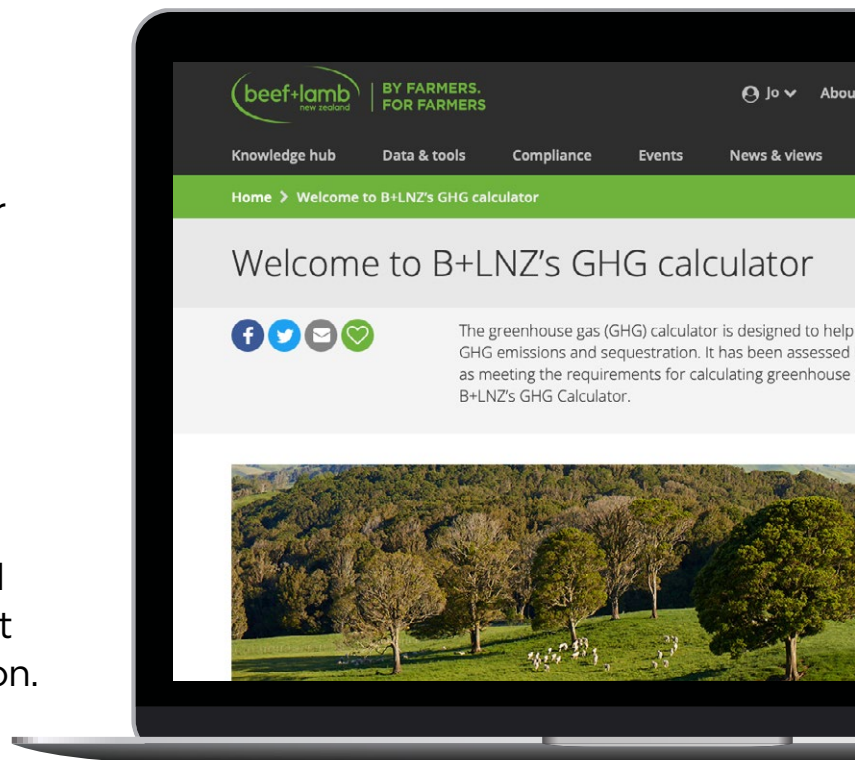




## GHG CALCULATOR - KNOW YOUR NUMBERS

By the end of 2022, every sheep and beef farmer should 'know their numbers' - that is, have calculated their Greenhouse Gas (GHG) emissions and sequestration.

Funded by RMPP and B+LNZ, the GHG Calculator is a tool for red meat farmers to measure and report on-farm GHG emissions and sequestration. It's a simple tool that reflects an individual farm's situation. You can benchmark your farm with similar farms.





## HOW TO USE THE GHG CALCULATOR

### 1 Log In to the 'Dashboard' on B+LNZ's website

The calculator is located on Beef + Lamb New Zealand's 'Dashboard' - if you don't already have an account, you'll need to create one at [www.beeflambnz.com/user](http://www.beeflambnz.com/user).

Click 'How to get started'



Any personal information that you provide to B+LNZ through the GHG Calculator or Action Plan is stored securely and your privacy observed. We will not share any identifiable information. For details, please see Terms of Use and our Privacy Policy.

The screenshot shows the B+LNZ website dashboard. The top navigation bar includes the logo, the tagline 'BY FARMERS. FOR FARMERS.', and user options like 'Matt', 'About B+LNZ', and 'Contact Us'. Below the navigation bar, there are menu items: 'Knowledge hub', 'Data & tools', 'Compliance', 'Events', 'News & views', and 'Your levies at work'. The main content area is titled 'My dashboard' and features three cards: 'My favourites', 'GHG Calculator and Action Plan', and 'Catchment Community Group'. The 'GHG Calculator and Action Plan' card has a button labeled 'HOW TO GET STARTED' which is highlighted with an orange border. The other two cards have buttons labeled 'GO TO MY FAVOURITES' and 'GO TO CATCHMENT COMMUNITY GROUPS' respectively.

### 2 Calculate your number

Click on "Start the GHG Calculator" and then 'Start New' (you can also find previous calculations saved here).

For more assistance, there are some 'User Guide' videos on the B+LNZ YouTube channel at [www.youtube.com/user/beeflambnz](http://www.youtube.com/user/beeflambnz), just search for "GHG Calculator" on that channel.

## Step 1: Your farm (required)

- i. **Farm name** – 50 characters; you can add scenario name also if you wish to analyse the farm business as separate farms. For example: “Hill Farm: Status Quo 2019”
  - ii. **Production Region** – based on B+LNZ’s Economic Service regions. A map is in Appendix 1.
  - iii. **Farm Class** – based on the Region you are in. Select the description that best suits your farm, the farm class definitions can be found in Appendix 2.
  - iv. **Total Farm Area (hectares)** – include land leased by you; exclude land you lease to someone else
  - v. **Grazed Area (hectares)** – exclude land not farmed (such as wetlands and forestry and exclude any area that is a dairy milking platform)
  - vi. **Analysis date** – automatically filled
  - vii. **Analysis Season** – ensure your information is for the same year so that your information will align correctly later
  - viii. **Farm GST Number** – GST numbers are used solely for the purpose of counting farm businesses that have completed this calculation. Your GST number and associated information are never shared with anyone.
- 

## Step 2: Fertiliser and lime use (See Appendix 3 for more detail)

The elemental weight of nitrogen (N) is required, in kilograms – the actual amount of N itself, not the total fertiliser. B+LNZ have supplied a conversion chart for the most common types (see Appendix 1) so you can convert the product weight into elemental weight. If the product you have used is not on this chart, then the percent N should be on the invoice or seek guidance from your fertiliser representative.

- i. **Enter total amount of lime used on farm (in kilograms, not tonnes)**
  - ii. **Enter total amount of dolomite used on farm (in kilograms, not tonnes)**
  - iii. **Enter total elemental N weight (kg) applied on farm for fertilisers containing N:**
    - Non-urea N fertilisers
    - Urea **without** urease inhibitor
    - Urea **with** urease inhibitor (such as SustainN, Agrotain, N-Protect)
- 

## Step 3: Vegetation (exotic and indigenous; area at Open, in hectares)

- i. **Exotic forest 28 years or younger**
  - Non-native woody vegetation such as pines, poplar and willows
  - Area at open
  - Harvested this year
- ii. **Indigenous forest (mature canopy over 5 metres; include areas of manuka)**
  - Stands of native trees such as Totara, Kauri and Kowhai
  - Regenerating (less than 100 years old)
  - Established (more than 100 years old)
  - Harvested this year
- iii. **Shrubland (mature canopy height less than 5 metres)**
  - Such as manuka/kanuka and matagouri
  - Less than 30 years old
  - 30 years or more old
  - Harvested this year
  - Note: non-woody vegetation such as tussocks, rushes and flax are not included

Once completed, click '**Livestock Balances**' to move to the next section.

## Step 4:

- i. **Sheep** – Enter Open and Close numbers for:
    - Owned-On: Sheep you own that are on-farm
    - Owned-Off: Sheep you own that are grazed off-farm
    - Grazed-On: sheep you don't own, that are grazing on your farm.
  - ii. **Beef Cattle** – Enter Open and Close numbers for:
    - Owned-On: beef cattle you own that are on-farm
    - Owned-Off: beef cattle you own that are grazed off-farm
    - Grazed-On: beef cattle you don't own, that are grazing on your farm. Do not include dairy grazers here – they are included in the next section.
  - iii. **Dairy Cattle** – Represents owned and non-owned grazing, dairy cattle that are not currently being milked. Enter open and close numbers for:
    - Owned-On: dairy cattle you own that are on-farm
    - Owned-Off: dairy cattle you own that are grazed off-farm
    - Grazed-On: dairy cattle you don't own, that are grazing on your farm.
  - iv. **Deer** – Enter Open and Close numbers for:
    - Owned-On: deer you own that are on-farm
    - Owned-Off: deer you own that are grazed off-farm
    - Grazed-On: deer you don't own, that are grazing on your farm.
- Ensure that livestock classes have been 'aged up' at season's close. For example, a flock of ewe hoggets at season's open will be aged up at the close of the season and become two-tooths. This is generally already done in your Financial Statements.
  - Remember to separate Open and Close stock numbers in Financial Statements into those owned-on and those owned-off (grazing), if applicable.
  - Take care with stock 'aging up' – that is becoming the next age group at close. Lambs born in the financial year will end it as hoggets, for example; while those starting the year as hoggets will end it as 2-tooths. This is the most common cause of errors in stock reconciliations.

Once completed, click '**Grazing movements**' to move to the next section.

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## Step 5: Livestock balances – grazing

**Stock grazed on** (If no stock grazed on, click the red X button on the right to remove this section)

- i. Select stock class from the drop-down menu
- ii. Enter number that arrived
- iii. Enter number that left
- iv. Date arrived: select either 'On hand at open' or enter date they arrived on farm
- v. Date left: select either 'On hand at close' or enter date they left
- vi. The calculator will then automatically work out what proportion of the year the stock were on your farm
- vii. To add more stock, click 'Add 1' to add a line or 'Add 5' to add 5 lines.

**Off-farm grazing** (If no stock grazed off, click the red X button on the right to remove this section)

- i. Select stock class from the drop-down
- ii. Enter number that departed
- iii. Enter number that returned
- iv. Date departed: select either 'Off Farm at open' or enter date they left the farm
- v. Date returned: select either 'Off farm at close' or enter date they returned
- vi. The calculator will then automatically work out what proportion of the year the stock were actually on your farm
- vii. To add more stock, click 'Add 1' to add a line or 'Add 5' to add 5 lines.

Once completed, click '**Livestock movements**' to go to the next section.

## Step 6: Livestock movements

Here you enter births, purchases, sales and 'used on farm' (such as dog-tucker and personal use). Stock numbers on hand at open and close will be automatically populated by earlier sections, as will grazing movements on and off.

For each stock class, enter:

- i. Births
- ii. Purchases
- iii. Sales – separate into store and prime
- iv. Used on farm (stock killed for dog tuckers, home-kill and the like).

Losses will be automatically calculated – check these to make sure you've got the right information entered. This provides you with a check that livestock have been aged up or have been traded as the correct livestock class. If opening or closing numbers need to be changed you can click back to the Livestock balances tab.

**Note:** Ensure that animals are sold from the livestock class they were at open, this is more of an issue with non-June balance dates. For example, with a March balance date:

- Lambs get aged up and become hoggets for the start of April, may be recorded as being sold as lambs in May
- Then lambs have been sold that haven't been recorded as births – creating negative losses
- And, those hoggets at open have disappeared – creating exaggerated adult sheep losses.

Once completed, click **Results** to complete the calculation.

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## Step 7: Results

Click **Save Results** to keep the calculation. You can print and download a copy.

The table outlines gross emissions by each gas type methane (CH<sup>4</sup>), nitrous oxide (N<sup>2</sup>O) and carbon dioxide (CO<sup>2</sup>), as well as providing a conversion to CO<sup>2</sup> equivalents (CO<sup>2</sup>-e). It also outlines any offsets, and provides an estimate net CO<sup>2</sup>-e emissions in the bottom line

B+LNZ supports a split-gas approach, which means treating CH<sup>4</sup> (a short-lived gas) differently from N<sup>2</sup>O and CO<sup>2</sup> (long-lived gasses) because their impact on global warming behaves differently. However, a commonly used metric for comparisons of warming is CO<sup>2</sup>-e so this is presented to you.



For help with this tool, you can email us at [GHGCalculator@beeflambnz.com](mailto:GHGCalculator@beeflambnz.com)



# APPENDICES

## Appendix 1: Production Regions

### A Northland-Waikato-BoP

Far North  
Whangarei  
Kaipara  
Auckland  
Thames-Coromandel  
Hauraki  
Waikato  
Matamata-Piako  
Hamilton City  
Waipa  
Otorohanga  
South Waikato  
Waitomo  
Taupo  
Western Bay of Plenty  
Tauranga  
Rotorua  
Whakatane  
Kawerau  
Opotiki  
Ruapehu

### B Taranaki-Manawatu

New Plymouth  
Stratford  
South Taranaki  
Wanganui  
Rangitikei  
Manawatu  
Palmerston North  
Horowhenua  
Kapiti Coast  
Porirua City  
Upper Hutt City  
Hutt City  
Wellington City

### D Marlborough-Canterbury

Tasman  
Nelson City  
Marlborough  
Grey  
Buller  
Kaikoura  
Hurunui  
Waimakariri  
Christchurch City  
Selwyn  
Ashburton  
Timaru  
Mackenzie  
Waimate  
Waitaki

### C East Coast

Gisborne  
Wairoa  
Hastings  
Napier City  
Central Hawke's Bay  
Tararua  
Masterton  
Carterton  
South Wairarapa

### E Otago-Southland

Westland  
Central Otago  
Queenstown-Lakes  
Dunedin City  
Clutha  
Southland  
Gore  
Invercargill City



## Appendix 2: Farm Class

Beef + Lamb New Zealand's Sheep and Beef Survey classify NZ sheep and beef farms into 8 farm classes, depending on a number of features.

### The eight farm classes

**South Island high country** Extensive run country at high altitude carrying fine wool sheep, with wool as the main source of revenue. Located mainly in Marlborough, Canterbury and Otago.

**South Island hill country** Mainly mid-micron wool sheep mostly carrying between two and seven stock units per hectare. Three quarters of the stock units wintered are sheep and one quarter beef cattle.

**North Island hard hill country** Steep hill country or low fertility soils with most farms carrying six to 10 stock units per hectare. While some stock are finished a significant proportion are sold in store condition.

**North Island hill country** Easier hill country or higher fertility soils than Class 3. Mostly carrying between seven and 13 stock units per hectare. A high proportion of sale stock sold is in forward store or prime condition.

**North Island finishing farms** Easy contour farmland with the potential for high production. Mostly carrying between eight and 15 stock units per hectare. A high proportion of stock is sent to slaughter and replacements are often bought in.

**South Island finishing-breeding farms** A more extensive type of finishing farm, also encompassing some irrigation units and frequently with some cash cropping. Carrying capacity ranges from six to 11 stock units per hectare on dryland farms and over 12 stock units per hectare on irrigated units. Mainly in Canterbury and Otago. This is the dominant farm class in the South Island.

**South Island finishing farms** High producing grassland farms carrying about 10 to 14 stock units per hectare, with some cash crop. Located mainly in Southland, South and West Otago.

**South Island mixed cropping and finishing farms** Located mainly on the Canterbury Plains. A high proportion of their revenue is derived from grain and small seed production as well as stock finishing.

## Appendix 3: Fertilisers

### Elemental N Weight

For nitrogen-containing fertilisers (such as Urea, DAP or Crop20), enter the total elemental N weight – the actual amount of nitrogen applied, not the total fertiliser weight.

This is total fertiliser applied multiplied by the percentage of N it contains. For example:

- 21 tonnes of Urea x 46% N = 9,660 kg N
- 17 tonnes of Cropmaster20 x 18.8% N = 3,196 kg N

Some typical fertiliser analyses are contained in the table below – see your Fertiliser Company for analyses of other products.

**Table 2: Nutrient content of some common N-containing fertilisers**

Product Name	Nutrient Content (%)				Kg of elemental N per tonne	Fertiliser type
	N	P	K	S		
Urea	46.0				460	Urea without urease inhibitor
Flexi-N	43.2				432	
N-Protect	45.9				459	
Sustain	45.9				459	Urea with urease inhibitor
Sustain 25K	23.0		25.0		230	
Ammo 31	30.4			13.8	304	
Ammo 36	35.6			9.2	356	Non-Urea N fertiliser
Ammonium Sulphate	20.0			23.0	200	
Cropmaster 15	14.8	10.0	10.0	7.4	148	
Cropmaster 20	18.8	10.0		12.0	188	
Cropzeal 20N	18.6	10.5		11.5	186	
Cropzeal Boron Boost	16.5	19.5		1.0	165	
DAP	17.6	20.0		1.0	176	
DAP13S	10.6	14.8		12.6	106	

*Product trade names are used here for illustration only and no endorsement or otherwise by B+LNZ is intended. For details of other fertiliser products, contact your supplier.*

### Acknowledgements

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