

# Land Use Change From Permanent Deforestation



Dairy for life

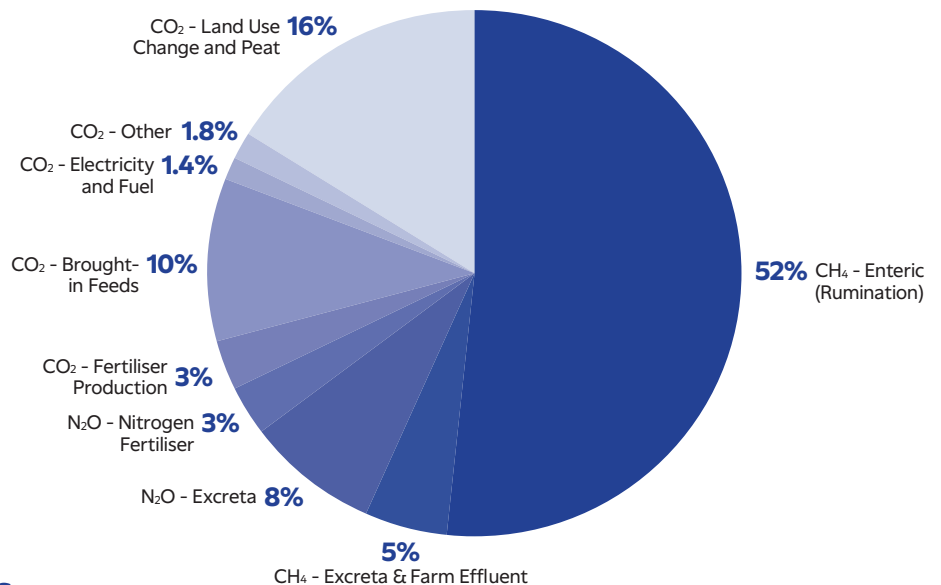
Learn more about the historic and permanent conversion of forest to grassland and why we report emissions from these events.

## Importance to the Co-op

Permanent conversion of land areas from forest to grassland is a significant component of the global carbon cycle.

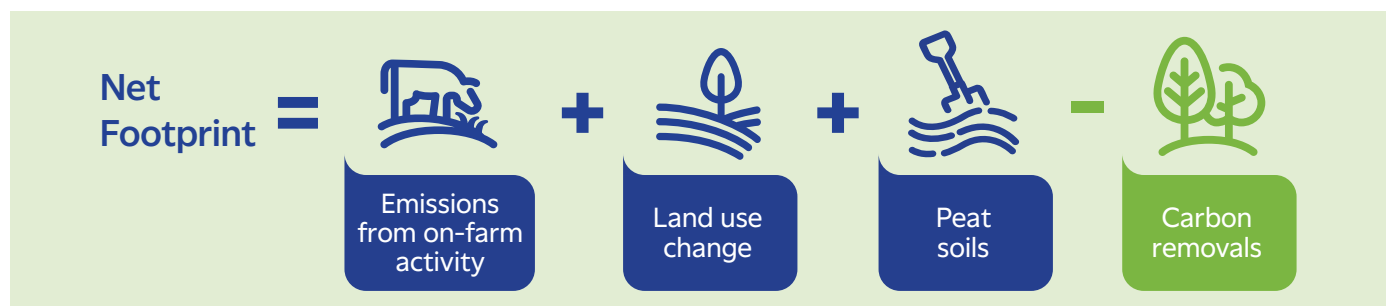
Emissions from permanent deforestation currently account for 12% of the Co-op's annual on-farm greenhouse gas (GHG) footprint. Peat makes up the rest of the "Land Use Change and [Peat](#)" wedge.

Tracking and reporting these emissions is crucial as they contribute to our product footprint.



## Importance to Our Customers

To meet international GHG reporting standards, we now need to include emissions from peat soils and permanent deforestation in our carbon footprint calculations at farm level. Using farm-level data ensures that all emissions and removals are accounted for within each farm. This is why the Customer Incentive includes emissions from on-farm activity, peat, land use change from permanent deforestation, and carbon removals.



Remember! The Co-operative Difference Emissions Excellence achievement focuses on things farmers can change - the on-farm activity emissions, and carbon removed by woody vegetation. Therefore, emissions from permanent historical deforestation or peat are not included in the Emissions Excellence calculation.

## What are emissions from land use change?

Land use change is a permanent shift from forest to grassland. Trees and vegetation act as carbon sinks, and when cut-down, stored carbon will be released into the atmosphere.

We include all areas of forest that have been harvested over the last 20 years. By looking back 20 years, it's possible to capture the full extent of permanent deforestation events and understand the long-term effect on carbon emissions.

Including land use change emissions in the footprint of milk produced by the Co-op is required by the International Dairy Federation. The method includes 5% of emissions from permanent deforestation events in the footprint each year for 20 years, until all the carbon loss has been accounted for.

### How do you know what areas have been converted from forests?

We overlay the boundary information from your Farm Environment Plan with satellite imagery and historic aerial photography from two publicly available datasets.

- a. The Land Cover Database (version 5.0) from Manaaki Whenua has imagery from 2001 and 2008 which is used to estimate deforestation prior to 2008.
  - <https://lris.scinfo.org.nz/layer/104400-lcdb-v50-land-cover-database-version-50-mainland-new-zealand/>
- b. Ministry for the Environment's Land-use and Carbon Analysis System NZ Forest Clearing 2008 2022 (v022) map is used to determine annual deforestation events from 2008 up to 2022.
  - <https://data.mfe.govt.nz/layer/99909-lucas-nz-forest-clearing-2008-2022-v022/>
  - This map has blue polygons which, when you click on them, display the year and the area (hectares) of the deforestation event.

The imagery is used to help identify areas of forest 300 square meters (0.03 ha) or larger – not including gorse, smaller vegetation, or single trees. Areas smaller than 0.03 ha are excluded based on imagery resolution and to avoid the detection of single trees.

Our field team have dashboards which show the deforestation polygons and the years assigned to these, please get in touch if you have any questions.

### What are the limitations of using this data?

Currently, we assume that any deforestation between 2001 and 2008 happened in 2007 due to a lack of imagery in-between these years. This means the last year of land use change emissions, for anything deforested between 2001 and 2008, is the 2027/2028 season.

However, if, evidence can be provided to show a deforestation event occurred in a different year, we can then assign the right year for the event. For example, if an event occurred in 2004 and there is evidence of this, the last of those emissions could be accounted for in the 2024/2025 season instead of the 2027/2028 season.

Deforestation Year	2004	2007
20-year responsibility window	2005 - 2024	2008 - 2027
2024/2025	5% remaining	20% remaining
2025/2026	Event fully accounted for	15% remaining
2026/2027		10% remaining
2027/2028		5% remaining
2028/2029		Event fully accounted for

Another issue is image resolution. Sometimes, areas with small plants or scrub can be mistaken for larger trees, and vice versa. We're working on improving our data to fix these issues over time.

### What if I can prove that permanent deforestation did not occur?

There may be instances where:

- the area was re-planted;
- it went to an alternative land use (e.g. that area is now in Kiwifruit);
- it was a natural clearing event (e.g. flood) that has been left to regenerate.

If you have proof of these scenarios for your farm, we can assess this information and adjust our data.

We are working on a process and resourcing for this, and will prioritise farms that are within the margins of achieving the Customer Incentive.

## **This area was not suited for trees and the carbon in the soil has improved under pasture. Do you consider this?**

Yes, soils under pasture usually increase in carbon in response to the shift from forest to grazing so the total carbon lost is the tree carbon minus the soil carbon gained. This overall loss is then divided across the 20-year responsibility window.

## **Do you track permanent deforestation on support land?**

Yes, we are required to track and report conversions from forestry into grassland on both the milking platform and support land. If the support land you use is not mapped in our system, then we assign defaults for land use change emissions based on national estimates of historical deforestation. You can choose to have owned and long-term leased support land mapped, so actual numbers can be used rather than defaults.

## **What happens if I convert an area of forest to pasture in 2025?**

If you permanently change one hectare of forest area into pasture in 2025, it will add about 50 tonnes of CO<sub>2</sub> per hectare per year to your farm's carbon footprint for the next 20 years. To understand the impact, you can divide the 50,000 kg of CO<sub>2</sub> by the amount of fat and protein corrected milk your farm produces. This way, the emissions are in the same units as your farm's other activities.

## **What are our competitors doing?**

All NZ milk companies use the same international reporting guidelines and therefore must tell customers about their emissions from peat and permanent deforestation. Currently, no other milk company provides farm-specific peat and land use change emissions data back to farmers and all exclude it from any recognition programmes using the same approach we do, as it is excluded from the Emissions Excellence achievement of Co-operative Difference.

We expect to see other milk companies start talking to farmers about areas of peat and deforestation as they look to improve the default assumptions for individual farms, as we are currently doing.

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*GHG emissions accounting methodologies, assumptions and scenarios to calculate emissions are continuously evolving. Fonterra retains full discretion over which methodologies, processes and criteria it chooses to adopt in its business at any given time, and no correspondence will be entered into around selection and adoption of particular methodologies, processes or criteria – including the use of 'default' values where appropriate. Fonterra will use reasonable endeavours to correct information (at a farm level) where it can be clearly demonstrated that the information or assumptions on which Fonterra has calculated an output is incorrect. The information outlined in this document reflects current practice (as at April 2025), but may evolve in the future depending on the evolution of industry and/or international norms, advances in technology, and as data limitations are addressed over time.*

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