# **Peat Soils**

Learn more about organic soils and why we report emissions from them.

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### Importance to the Co-op

Farming on peat soils is a significant component of the global carbon cycle.

Emissions from peat currently account for 4% of the Co-op's annual on-farm greenhouse gas (GHG) footprint. Permanent historical deforestation makes up the rest of the "<u>Land Use</u> <u>Change</u> 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 include emissions from peat soils and permanent deforestation in our carbon footprint calculations. The calculations use farm-level data and traceability to meet audit requirements, ensuring 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 calculation for Emissions Excellence.

### Peat Soils are rich in carbon

Peat soils form in waterlogged conditions where plant material accumulates and decomposes very slowly due to a lack of oxygen. They are very rich in organic matter and can store up to 20 times more carbon than other soil types, acting as a net GHG sink in their natural state, despite releasing some methane.



When peat soils are drained or disturbed for agricultural use, oxygen is reintroduced, allowing aerobic bacteria to thrive and decompose the organic matter more rapidly. The stored carbon is released as carbon dioxide ( $CO_2$ ) and methane ( $CH_4$ ) and can also emit nitrous oxide if nitrogen fertilisers were applied – turning them into a source of

#### What is classed as 'Peat'?

Peat soils are classified as "organic" soils which have either:

- thick layers of organic material, like peat, within the top 60 cm of the surface, that was formed in wet conditions; or
- a peaty layer at least 10 cm thick, which can be pure peat, a mix of sand and peat, or a mix of loam and peat.

In some cases, a peaty topsoil layer may be buried, however, this is still considered an organic soil.

We use Maanaki Whenua's Fundamental Soil Layer (FSL) and the S-map (<u>https://smap.landcareresearch.co.nz/</u>) for classification. The FSL map is gradually being replaced by S-maps, however, it is still used in some locations while new data is being collected. Soil sampling continues as a part of S-map work, which covers 85% of dairy land in New Zealand so far, the data is updated once or twice annually.

Fonterra uses the soil map available in towards the end of the season for the analysis, overlaying these with the farm boundaries in the Farm Environment Plan. This provides the number of hectares of peat on each farm. This area is then multiplied by the emissions factor in the NZ Greenhouse Gas Inventory to get the emissions from peat for your farm.

#### What if I disagree?

If you disagree with the soil map, you can contact Manaaki Whenua (<u>https://smap.landcareresearch.co.nz/</u><u>support/faq)</u>.

- Manaaki Whenua will need data to be provided to make any changes.
- They may or may not update their map depending on the quality of this data.
- There is a protocol for soil testing that consultants can follow to ensure that soil testing information can be used.

We are working with Manaaki Whenua to see how we can work together to clarify the level of data required.

We are also working on sharing peat soil information in more detail to help you make decisions on whether this is an area worth focusing on. For example, if your farm is in a large well mapped peat zone, then additional soil sampling is highly unlikely to change the soil classification.

### What happens if my Peat soils are re-classified in the future?

Future reclassification of peat soils to non-peat may affect a farm's GHG footprint eligibility for Customer Incentives. Changes apply from the season they occur, and incentives aren't paid for past seasons, beyond the close of season data (June 30 immediately following close of the current season)

#### Do some organic soils emit more, or less GHG than others?

Wet peat soils in protected wetlands or areas not used for grazing may produce less GHG than heavily drained organic soils, but the New Zealand GHG Inventory doesn't currently differentiate between these uses. Ongoing research aims to understand how factors like location, organic matter content, water table, and climate affect emissions.

Recognising these differences also depends on our ability to track these factors (location, organic matter content, water table, and climate). Some activities, like mapping restored wetlands, are easier to track than others – such as annual water table levels.

Recent reports suggest that current emission factors might underestimate emissions from peat soils in New Zealand. We will continue to provide the most up to date information on how we account for peat soils as international guidance, or the NZ GHG inventory evolves, and what this means for ongoing eligibility for Customer Incentives.

## Why are peat soil emissions included, but stored carbon in other types of soil isn't included?

Peat soil emissions are included because GHG's are emitted each year, while stored carbon in other soils isn't, as we are only able to count changes in the carbon amounts.

Changes in land use can affect carbon soil stocks, but it is unclear if different management practices also have an effect. Measuring soil carbon changes requires baseline sampling and repeat samplings over several years, which is currently expensive and difficult to achieve at scale. There is also uncertainty about how soil carbon should be fairly accounted for, especially during droughts, floods, or cultivation when soil carbon is lost.

From current baseline data, most of our New Zealand soils are, at best, in a steady state with relatively high levels of carbon. This is a good place to be. It will be equally important to focus on reducing loss of carbon from these soils as well as trying to increase carbon stocks.

#### What impact do wetlands have on carbon sequestration (sink/source)?

Wetlands can store or release carbon depending on conditions. Research is ongoing to understand this better, currently focusing on coastal vs inland wetlands.

The government include wetlands in their broader "developing a carbon removals strategy". But similarly to peat, they need more data on variability across the country, nutrient status of the wetland, water table etc before they would put emissions factors in the NZ GHG Inventory. We are keeping a close eye on this space to see how it develops.

#### Are there any regulations on farming on peat?

Currently there are no specific regulations on farming peat soils, although some councils aim to manage peat subsidence. Emissions from peat soils are not considered in proposed agricultural emissions pricing.

#### 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 as 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.

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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