Fertiliser Association
Shaping profitable and sustainable farming

SUBMISSION

on

Draft Advice on New Zealand's Fourth Emissions Budget

to

He Pou a Rangi, Climate Change Commission

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About the Fertiliser Association of New Zealand

The Fertiliser Association of New Zealand is an industry association funded by member companies to address issues of common public good. Member companies include Ballance Agri-Nutrients Ltd and Ravensdown Ltd. Both are farmer co-operatives with some 35,000 farmer shareholders. Between them, our members supply the majority of fertiliser used in New Zealand. As co-operatives, they are driven by delivering best value to farmer shareholders rather than maximising the value of product sales.

The Association member companies have invested significantly in products, systems and procedures which support responsible nutrient management to enable a viable primary industry within environmental limits.

The Association submits on national policy and regulation, with the view that policy and regulation should be enabling, and that controls are both appropriate and necessary while providing for sustainable primary production.

The Fertiliser Industry is committed to supporting New Zealand's 2050 net zero emissions target and to enabling its farmer shareholders to achieve their ambitions in environmental management including reduction of agricultural greenhouse gas emissions.

Introduction

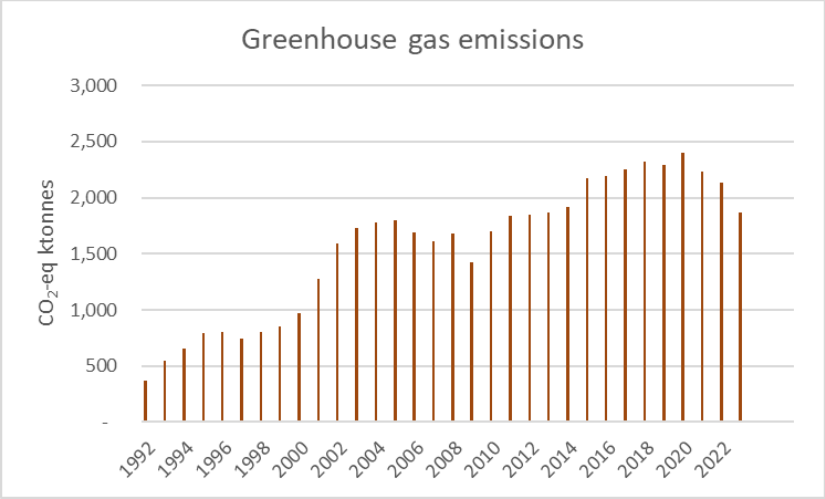
Enduring signals are important for business planning, investment and change. Emissions budgets provide this. While we cannot predict the future, well-crafted emissions budgets can provide a view of what is possible and what should be delivered.

There is a great deal of uncertainty about what the appropriate EB4 should be. At the same time the need to create enduring signals is important. If the emissions budgets are to be grounded, meaningful and achievable then the emissions budgets must be based on science and robust information and assumptions within a framework which includes how the budgets are to be achieved. It would seem prudent that recommendations for an emissions budget are not set independently from consideration of options on how to achieve them while commensurately protecting social and economic well-being.

Our submission focuses on nitrous oxide emissions and in particular those associated with fertiliser use.

Nitrogen fertiliser use

Use of nitrogen fertiliser on-farm is associated with direct and indirect emissions of nitrous oxide, and additionally for urea, emissions of carbon dioxide. Overall nitrogen fertiliser emissions in New Zealand peaked at 2.4 million tonnes CO_2-eq in 2019/20. Fertiliser emissions in 2022/23 were 1.9 million tonnes CO_2-eq representing a 0.4 million tonnes CO_2-eq reduction in annual emissions over three years.



Source: Developed from National Greenhouse Gas inventory methods and industry data

In the 2022 New Zealand greenhouse gas inventory, emissions associated with fertiliser represented 3.8% of agricultural emissions. Currently, about 60% of urea sold in New Zealand is coated with a urease inhibitor. This suggests that mitigation technology can have significant impact over time when its use has clear productivity benefits to farmers.

To support reduced environmental impact the fertiliser industry is:

- Providing farmer shareholders with quantitative information on emissions associated with applied fertiliser products.
- Working to deliver a nitrification inhibitor for use on farms to support a reduction in losses of nitrogen to the atmosphere and to water.
- Factoring the consideration of emissions into fertiliser product purchase decisions.

Substantive analysis of the pathway for the reduction of nitrous oxide emissions is needed

We would like to see further commentary and analysis of options to reduce nitrous oxide emissions. While fertiliser use is a small component of agricultural emissions, we are committed to finding ways of reducing emissions where possible while maintaining farm productivity.

There has been little commentary in the discussion document on nitrous oxide emissions or on opportunities to reduce them. The discussion document proposes substantive cuts in nitrous oxide emissions for EB4. The basis of this reduction is unclear in either the discussion document or the underlying technical reports. We have assumed it has been assessed based on projected changes to stock numbers as a result of land use change.

The demonstration pathway outlines a reduction in nitrous oxide emissions of 17%. A slightly smaller reduction appears to be proposed in the proposed EB4 (14%). While the reduction is the lowest reduction across all gases, such a reduction presents significant challenges.

As agriculture is the dominant source of nitrous oxide emissions, it has to be assumed that the Commission considers that such reductions will largely come from the agricultural sector. The Commission is assuming reductions in methane through increased productivity, fewer livestock, and land use change. The potential for reduction in nitrous oxide emissions from fertiliser seems to be based on further reduction in nitrogen fertiliser use, and the increased use of urease inhibitors. A reference to a 2013 Motu paper suggests that changes in how nitrogen is managed could reduce emissions by more than 15%. [There have been substantive changes in nitrogen use and management in the decade since the paper was written.] It is unclear if it is assumed that the changes in stock numbers will have a similar impact on nitrous oxide emissions or if it has it been assumed that fewer but more high-producing animals will result in a reduction in nitrous oxide emissions. Within existing land uses, it is generally assumed that breeding selection for methane reduction will lead to a reduction in methane emissions per hectare, but it has not yet been fully tested what this will mean in terms of nitrogen excretion, and resulting nitrous oxide emissions.

A 17% reduction in nitrous oxide emissions is substantive, amounting to a reduction of 1,100 ktonnes CO_2-eq. For comparison purposes, this is similar in magnitude to all the nitrous oxide emissions currently produced by drystock. It would equate to half the emissions of nitrous oxide associated with dairy cows, or almost all the nitrous oxide emissions associated with fertiliser use. The intent of such comparison is not to suggest that all the cuts would apply to one sector – but to highlight that cuts of this level will be very material and deserve substantive analysis of the potential economic and social impacts for New Zealand.

Potential for impact of inhibitors

The Commission notes that nitrous oxide emissions from agriculture remain relatively difficult to reduce, but reductions are possible through changes to farm practices including reducing use of nitrogen fertiliser. The Commission suggests that nitrification inhibitors are expected to be available to contribute to reducing emissions for the fourth emissions budget period, but have opted not to include such mitigations in the scenarios (and EB4 demonstration path) due to their relatively high cost compared to mitigation options for reducing other greenhouse gases.

The discussion document suggests that nitrification inhibitors are expected to be available commercially as soon as 2025, but that they are likely to come at a relatively high abatement cost compared to other

greenhouse gases. As such, nitrification inhibitors have not been included in the EB4 demonstration path.

The New Zealand AgriBusiness Group's analysis of agricultural greenhouse gas mitigation technologies for nitrous oxides is brief and superficial.

The first consideration needed is that nitrification inhibitors could potentially have application as both a fertiliser coating and as an in-situ urine amendment. We are also conscious of the dual benefits of nitrification inhibitors in terms of the potential for reduction of nitrate leaching alongside reduction of nitrous oxide emissions.

There are existing commercially available products which are very effective that could act in this way. However before legal use in New Zealand, they will require registration under the Agricultural Compounds and Veterinary Medicines Act 1997, and also, agreement on maximum residue limits through Codex Alimentarius.

There is significant fiscal and time challenge for any commercial supplier to take products through the regulatory system, and in developing the required evidence base. Formulation, application rates, efficacy trials, toxicology (in terms of potential for adverse environmental or animal health impacts), economics, and in particular the potential for food residues are all critical to determining the value of inhibitor products for pastoral agriculture.

Currently, there is a range of nitrification inhibitors that are potentially available, such as DCD, DMPP, and Nitrapyrin. There have been a number of detailed trials looking at the efficacy of these products to improve nitrogen use efficiency or to reduce emissions or leaching. Some of these trials have been undertaken in pastoral conditions. However, few of these trials have considered the challenging regulatory environment governing the use of these products.

Since the last consultation on the emissions budgets, significant progress has been made in development of a domestic regulatory system for environmental inhibitors. The next step is the development of international regulatory processes. There has been initial agreement at Codex on its role in terms of establishing internationally agreed residue limits for environmental inhibitors. While work is at an early stage it is an important first step in acknowledging the global benefits from environmental inhibitors.

It is still unknown if inhibitors can be delivered to the market in a cost-effective way to impact on EB4 or later budgets. Our view is that it is important to take a pragmatic approach regarding what emissions reduction will be realistic. We agree with the Commission's advice not to assume such potential reduction in EB4, but suggest that they continue to be the subject of analysis for EB5 rather than simply assuming reduction in nitrous oxide emissions on the basis of land use change.

Offshore mitigation

The Association does not support the proposal to disallow offshore mitigation for EB4. To achieve less than 1.5 degrees of atmospheric warming, or as close to it as possible, requires that the atmosphere is recognised as a single catchment for emissions and mitigations. The issue to be addressed is ensuring mitigations that result in reduced emissions are bone-fide and genuine offsets, regardless of where they are achieved.

Concluding remarks

Agriculture is a substantive portion of New Zealand's emissions. As we move towards the establishment of successive emissions budgets it will be increasingly important to develop a realistic assessment of changes in the agricultural sector, including through the use of new technologies. Without such analysis emissions budgets will not be grounded in science and information, meaning budgets will not be meaningful and will not support desired change.

We welcome the opportunity to provide input and are happy to discuss any of the issues raised.

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