

Greenpeace Canada submission regarding reducing emissions arising from the application of fertilizer in Canada's agriculture sector

Introduction

Canada has made a commitment to achieve net zero emissions by 2050. [Ten per cent](#) of current emissions come from crop and livestock production, even excluding emissions from fertilizer production and the use of fossil fuels. [About one third](#) of these emissions come from nitrous oxide (N₂O), making it a clear priority for climate policy.

Nitrous oxide, released from nitrogen fertilizer when applied to the soil, is a greenhouse gas over [250 times](#) more potent than carbon dioxide (CO₂). Globally, synthetic nitrogen fertilizers are a major driver of the climate crisis, contributing [2.4%](#) of global greenhouse gas emissions. The need for large amounts of fossil fuel in their production, natural gas in particular, has led to some commentators referring to them as “fossil fertilizers.” Soil emissions and emissions from producing these fertilizers respectively [amount to](#) around two-thirds and one-third of their overall emissions.

In response to the public consultation regarding Agriculture and Agri-Food Canada's [Discussion Document: Reducing emissions arising from the application of fertilizer in Canada's agriculture sector](#), Greenpeace Canada recommends the following 7 priorities for a food system that is low in emissions from synthetic fertilizers and supports a healthy environment and communities.

1. Reduce emissions arising from the application of fertilizer by 50% by 2030

Greenpeace International, GRAIN and the Institute for Agriculture and Trade Policy (IATP) revealed in [2021 research](#) that emissions from synthetic nitrogen fertilizer in Canada are [among the highest](#) in the world per capita. Canada's enormous consumption and production of these fertilizers contributes to 2.9% of their global emissions, despite having only 0.4% of the world's population.

In light of these disproportionately high emissions from nitrogen fertilizers in Canada, and the [seeming](#) reluctance on the part of the federal government to set meaningful targets elsewhere for the agriculture sector, we recommend increasing the proposed target of reducing absolute emissions to a minimum of 50% below 2020 levels by 2030. With industrial agriculture in Canada one of the highest emitters globally when it comes to nitrogen fertilizers, swift reductions are more urgent here than almost anywhere else in the world. Indeed, according to [recent reports](#), agriculture was one of few sectors in Canada which actually saw an increase in emissions in 2020.

2. Less absolute emissions, not more efficient emissions

While the chemical fertilizer industry has [lobbied vocally against](#) absolute emissions reductions and instead for improving “emissions intensity”. However, a low-emission food system means a low-input food system, and so inevitably requires deep reductions in the use of synthetic nitrogen fertilizers. Carbon offsetting offers no substitute for reducing emissions in agriculture, as with [other sectors](#).

Therefore, it is critically important for the credibility and effectiveness of the government’s climate plans to set clear targets for absolute emissions reductions. In the alternative, we could in fact see the usage of artificial fertilizers (and associated emissions) grow, albeit with slightly more efficient usage in expanding industrial agriculture. This is not a serious climate solution.

3. Reduce emissions from factory farms

A growing percentage of the world’s livestock is now raised on factory farms and feedlots that depend on industrial animal feed. Factory farms growing feed crops use synthetic nitrogen fertilizers rather than animal manure that would have traditionally provided fields with nitrogen.

According to new research commissioned by Greenpeace Canada and World Animal Protection Canada, livestock feed production emissions account for approximately 28% of all emissions from crop production in Canada.¹ This means roughly 8.38 million tonnes of CO₂-equivalent are emitted from the production of livestock feed annually.² Approximately 85% of these emissions derive from the production and application of nitrogen fertilizers.³

As the [National Farmers Union](#) recently wrote, “we must make changes to cattle production systems if we are to reduce overall agricultural emissions in line with Canada’s commitments and planetary limits.” While cattle contribute to almost 50% of feed emissions, feed for pork and poultry make up the remainder. These significant emissions associated with all forms of industrial livestock production are often overlooked.

In light of this data, it is clear that in order to tackle high emissions from nitrogen fertilizers, we must also address the role of industrial livestock and factory farming in particular so that more crops produced are consumed by people, not livestock, and feedstocks for animals are not dependent on fossil fertilizers. Targets to reduce the production and consumption of industrial livestock would be an important way to address this. Globally, Greenpeace is calling for a [50% reduction](#) in the production of industrial meat by 2050. Wealthy, high meat-consuming nations like Canada have a particular responsibility to meet and exceed this target.

¹ Methodology available on request.

² Ibid.

³ The source breakdown of livestock feed production emissions is based on our estimates of livestock feed production by geographical region and emissions factors derived by the Canadian Roundtable for Sustainable Crops in their [2017 GHG Emissions Analysis](#). Full methodology available on request.

4. Caps on production, not just emissions from application

Canada hosts a number of transnational corporations who control a [large amount](#) of the global production and distribution of synthetic nitrogen fertilizers, such as Koch Industries, Nutrien and Yara. According to our new research, roughly 5.5 million tonnes⁴ of these fertilizers are produced here every year. Industrial processes to produce them consume around 8-10%⁵ of our natural gas.

Much of the fertilizers produced in Canada are used domestically, contributing to our huge over-dependence. A significant portion is exported however, including to countries like Indonesia⁶, where it also drives nitrous oxide emissions during application and where palm oil and other big agribusiness often use [the lion's share](#) of synthetic fertilizers.

A coherent approach to reducing emissions from nitrogen fertilizers also requires targets to reduce production, commensurate with emissions reductions targets. Alternatively we could find ourselves in a situation where Canada is on the one hand taking small steps to reduce fertilizer emissions at home, but at the same time accelerating them around the world. While this would be highly profitable for a very few chemical corporations, it simply wouldn't be fair or effective.

5. Food for people, not fuel

Biofuels can be made from food crops like soy, canola or corn. Ethanol, for example, is a biofuel that is used as an additive to gasoline. In Canada it is largely produced using wheat and corn. Burning these food crops as biofuels is not a sustainable replacement for fossil fuel use. Especially when those crops are associated with massive nitrous oxides emissions before even being converted to fuel and burnt.

Biofuels from food crops won't solve world hunger, but they will exacerbate the climate crisis by encouraging massive emissions at multiple stages: in transportation, fertilizer production, nitrous oxide release and ultimately combustion. The federal government should not be driving demand for this emissions-intensive and food-wasteful source of energy. It should avoid encouraging biofuel production and instead embrace truly sustainable energy sources.

Crops should feed people, not fuels.

6. Decolonizing agriculture

⁴ Methodology available on request.

⁵ While the *Canadian Association of Petroleum Producers* (CAPP) [asserts that](#) "we utilize about 10 per cent of our extracted natural gas to create ammonia for fertilizer," a [2009 report](#) by Natural Resources Canada concluded in contrast that "the fertilizer industry consumes about 8 percent of the natural gas used in Canada."

⁶ Data available on request.

The solution to these interconnected problems, driven by colonization and the dispossession of Indigenous lands for profit, will first and foremost come through respect for Indigenous rights and knowledge. The federal government should support Indigenous food producers, including hunters, and the application of essential Indigenous knowledge holistically across food systems and agriculture in order to decolonize and decarbonize the food we eat.

This will necessarily also include fully supporting food security and sovereignty for all Indigenous Peoples. In 2021, the Assembly of First Nations released [Key Findings and Recommendations for Decision-makers](#) from the groundbreaking *First Nations Food, Nutrition and Environment Study (FNFNES)*. Also in 2021, Inuit Tapiriit Kanatami released a [multi-year, comprehensive strategy](#) for improving Inuit food security in Inuit Nunangat, the homeland of Canadian Inuit. Fully resourcing these visionary strategies and recommendations is an urgent imperative towards reconciliation. As is respect for Indigenous governance on the land to maintain healthy environments, cultures and food systems.

7. Support for farmers transitioning to organic methods

Large petrochemical corporations impose a financial burden on farmers to grow crops with their high-cost artificial fertilizers. This perpetuates an unjust and unsustainable model of high emissions agriculture, which is prone to supply chain disruptions from diseases, wars and climate change. Most recently, the war in Ukraine exposed the fragility of our dependence on synthetic fertilizer - prices have soared, along with [record profits](#) for the multinationals controlling their production. The solution is to break our dependence on fossil fertilizers and shift to ecological methods that are resilient in the face of multiple disruptions and capable of meeting the world's food needs.

Organic, or ecological, farming is currently practiced by a relatively small number of farmers. Organic farming is characterized by a diversity of crops, plants and animals and practices that mimic natural systems to access the nutrients required for growth. Many of its practices and principles have been developed with Indigenous knowledge accumulated over millennia. A substantial body of research shows the environmental benefits of ecological farming, including eliminating the need for chemical fertilizers. This includes the [most recent IPCC report](#) which identifies the GHG, nutrient and other ecosystem benefits of agroecology.

To reduce emissions from artificial nitrogen fertilizers, the government should finance the construction of organic compost and seed facilities, as well as training and advisory services for ecological farming. Deepen government resourcing for agroforestry, which integrates trees into farmland and can reduce dependency on fertilizers, while providing medicines and products such as nuts, fruit and resin. [Pulses, such as peas](#), lentils and chickpeas not only increase nitrogen in the soil, but when produced via ecological methods have the potential to provide low-emissions protein alternatives to factory farmed meats.

The Greenpeace logo, consisting of the word "GREENPEACE" in a white, stylized, sans-serif font, centered within a solid green rectangular background.

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This shift to more ecological production methods requires transformative change to our food systems, from production to consumption. Equitable access to farming should be ensured by supporting in particular historically marginalized groups such as women, BIPOC communities and youth producers in order to foster an inclusive future for low-emissions farming.