Adoption of controlled-release fertilizers to transition to low-carbon agriculture

- Feedback & response -

July 28, 2025

Overview

This document outlines the feedback received during the public consultation period on version 0.95 of the GHG methodology for controlled-release fertilizers, detailing how the feedback was addressed and its impact on the methodology, culminating in version 1.

Detailed feedback and responses

Section	*Feedback/comment*	*Response*
Definitions	From a technical perspective, I question if the definition of CRF on p.2 is stringent enough. Please refer to previous definitions of CRFs in seminal works like Trenkel (2010) Slow- and Controlled Release and Stabilized Fertilizers in Agriculture. An Option for Enhancing Nutrient Use Efficiency in Agriculture - Fertilizer as well as further IFA publications. I would therefore suggest aligning with standard industry definitions so there is clarity for all future users of the methodology.	Accepted suggestion. New definition now is: "*A fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference 'rapidly available nutrient fertilizer' such as ammonium nitrate or urea, ammonium phosphate or potassium chloride. Such delay of initial availability or extended time of continued availability may occur by a variety of mechanisms. These include controlled water solubility of the material by semi-permeable coatings, occlusion, protein materials, or other chemical forms, by slow hydrolysis of water-soluble low molecular weight compounds, or by other unknown means.*" based on Trenkel (2010). https://www.fertilizer.org/wp-content/uploads/2023/01/2010_Trenkel_slow-release-book.pdf
1.2 Applicability of the methodology	In the CRF meth., we read that the impact is attributed only to N (Page 9: However, the impact of the CRF is attributed only to the nitrogen (N) component of the product). Even though nitrogen is the major emitter compared to other elements, we know that all nutrients contribute to the total environmental impact of a product. We also know that some companies work on technologies for nutrient use efficiency of P and K, so to be inclusive and holistic in this methodology, we suggest including it for all nutrients.	Good point and this was a conscious decision as well. From what we understand, N is the only contributor to GHG emissions after they are placed on the field, compared to P and K. Of course P and K come with production emissions, and that is why they are included in the *Adoption of low-carbon fertilizer methodology*. As such we decided to focus the methodology only on N part, for the CRF methodology. We indeed acknowledge that CRF focused on P and K could have increased Nutrient Use Efficiency, meaning that one would need to place less of them and thus decrease the production related emissions. However, we have not yet seen any demand or discussion on this topic to actually develop P/K-CRF GHG projects. To add to this, the literature is much more focused on N based CRF products rather than P or K. So even if we allowed this intervention, it would not be easy to find strong enough scientific evidence.
1.3 Eligible products	In chapter "1.3 Eligible products" you state that slow-release fertilizers are excluded from the standard. The mechanism by which N2O emissions are avoided when using CRF is the same as in slow-release fertilizers. In both cases, low but steady concentrations of ammonium and nitrate in the soil lead to higher nutrient	Agree with the suggestion. We have included SRF products as eligible products. This is also visible in the definitions as well.

Section	Feedback/comment	Response
	use efficiencies and lower N2O emissions. I propose to broaden the scope of the methodology to include slow-release as well as controlled-release fertilizers.	
1.8 Leakage & permanence	When talking about nutrient use efficiency, we suggest adding the agronomic indicators that the EPD adopts i.e. Agronomic Efficiency Index and the uptake index. This is because the fertilisers' primary role is agronomic production, which could affect food security. In doing so, we will avoid using the emission values regardless of the agronomic values of products to greenwash consumers.	In Section 6.1 Monitoring Table, the methodology acknowledges that multiple metrics can be used to assess Nitrogen Use Efficiency (NUE) depending on data availability and feasibility at the project level (see Appendix C: Different metrics of GHG emissions). While the default calculation is based on crop yield and N fertilizer rate, we recognize that this approach does not fully capture N output, especially in cases such as higher grain protein content, which is particularly relevant for crops like wheat. To provide flexibility and improve accuracy, the Appendix now includes a table outlining different NUE indicators, such as Partial Factor Productivity (must always be presented and tracked), Agronomic Efficiency, and N balance, which may be used individually or in combination, based on the level of data accessible to the project developer.
4.1 EF-data reference approaches Approach 3: LCA or PCF data	We suggest the evidence for the carbon footprint be taken from LCAS, not from PCF, for different reasons. The first is that other environmental impacts could indirectly impact the carbon cycle and, therefore, climate change. For example, nitrification in the short term is unrelated to the carbon cycle, but in the mid- and long-term, it leads to desertification and strongly perturbs the carbon cycle. Microplastics in controlled-release fertilisers are another issue that a normal PCF would not take into consideration. Secondly, sustainability reporting, for now, does not include the scope 3 emissions declaration, which could be a problem.	The PCF is only used to calculate the emissions coming from the Production Phase of the fertilizers. So indeed this could either be taken from a proper LCA (which we have added as a possibility of evidence) or directly from a (validated) PCF report. On your argumentation : 1. For the risks you mentioned (other environmental impacts, perturbation of the carbon cycle, microplastic accumulation), we actually require the project developer to create a Risk and Mitigation Plan to be fully transparent on these risks and explain how they are going to be dealing with them. For instance, microplastics are a real issue, but in the EU the plan is to transition to biodegradable versions in the next few years. As such, a project developer could say that they would start with regular CRFs in the next growing season, but only as an intermediary step. Same goes for the long-term impact on the carbon cycle; project developers must make sure that their protecting their soils (it is for their own benefit as well) 2. For the Scope 3 reporting, we do not see an issue, as from the PCF/LCA we only need the production emission and not the Scope 3 emissions (of the producer of fertilizers), which are essentially the transportation and in-field emissions. These will be calculated separately, using the methodology (see scoping figure page 24)