



Online Consultation for Developing the FAO Code of Conduct for the Management of Fertilizers

Contribution of the International Fertilizer Association

The International Fertilizer Association (IFA) welcomes this initiative led by FAO and is pleased to share its feedback to the questions raised by the facilitators of the online consultation. More generally, we believe it is important for FAO, as the UN's lead agency on food and agriculture, to develop guidance on fertilizer use, having already developed guidelines or codes of conduct for a number of other agricultural inputs (i.e. pesticides, animal feed). IFA, an active member of the Global Soil Partnership, supported the Voluntary Guidelines for Sustainable Soil Management, which provides important guidance on plant nutrition, which could usefully be expanded on in a Fertilizer Management Code of Conduct.

IFA has enjoyed a longstanding and good working relationship with FAO. Back in the 1960s, our organizations worked closely together under the Fertilizer Industry Advisory Committee (FIAC) to inform farmers in developing countries about the role fertilizers can play in increasing yields. The key issue before us today is how to promote effective and efficient use of fertilizers to promote food security while minimizing nutrient losses to the environment, and IFA stands ready to engage with FAO on this important task. IFA and its members can provide valuable expertise and input into this important project, and help FAO in the ultimate promotion of the Code of Conduct among key stakeholders. Given our longstanding relationship, cemented in 2016 by a Memorandum of Understanding, which includes pillars on advocacy, communication and knowledge sharing, IFA looks forward to playing a constructive role in this important and timely project.

About IFA

The International Fertilizer Association (IFA) is the only global fertilizer association with a membership of almost 500 entities in 67 countries, encompassing all actors in the fertilizer value chain: producers, traders, distributors, service providers, advisors, research organizations and NGOs. IFA promotes the efficient and responsible production, distribution and use of plant nutrients to enable sustainable agricultural systems that contribute to a world free of hunger and malnutrition.

Given the global scope of the CoCoFe, do you think the objectives are appropriate? If not, how would you add to them or modify them?

General comment: We believe that the Code of Conduct in general, and its objectives in particular, should address all nutrient sources used for plant nutrition (mineral and organic), which can be defined as “fertilizers” in its broad sense. In order to ensure common understanding, it will require the precise definition of key terms.

Objective 1: The objective should be reworded as “**Increasing global food production**” to be consistent with long-term projections, which all highlight the need to increase the global agricultural output to meet the requirements of the still fast-growing world population and accommodate dietary changes in emerging and developing economies. Biomass production for bioenergy and biomaterials is likely to create additional demand. Part of this additional demand can be addressed by reducing food losses and wastes but bridging yield gaps will remain an essential objective.

Objective 2: To be sustainable, fertilizer management has to be both efficient (ratio between what goes in and out of the farming system) and effective (meet productivity objectives). If efficiency is achieved to the detriment of crop yield, it cannot be considered a sustainable option. Therefore, we suggest rephrasing objective 2 as follows: “**Optimizing the use efficiency and effectiveness of plant nutrients to ensure sustainable agricultural systems**”.

Objective 3: The list of loss pathways doesn’t need to be spelt out in the objective. In addition, the positive environmental impacts associated with avoided deforestation should be mentioned. We suggest the following wording as an alternative: “**Minimizing environmental impacts associated with nutrient losses to the environment and increasing environmental benefits through avoided land use changes**”.

Objectives 4 and 5: Again, it doesn’t seem appropriate to give an example in the objective (objective 4). Heavy metals are indeed unwanted trace elements but other impurities such as organic compounds and pathogens may also have negative impacts on the environment and human health. In addition, objectives 4 and 5 are closely related and quite redundant. We would like to suggest the following wording for objective 4: “**Ensuring food safety by assessing and managing risks from non-nutritive trace elements in fertilizers**”.

New Objective 5: Adding a reference to food quality would be useful as fertilizer management practices can influence nutritional quality of food products. The proposed objective could read “**Improving food quality and nutrition security through optimal use of plant nutrients**”.

New objective 6: Surprisingly, no objective refers to maintaining or enhancing the health of agricultural soils, while nutrient management plays a key role in keeping productive soils through replacement of nutrients removed with consecutive harvests and in controlling soil organic matter levels. By preventing soil nutrient mining and soil organic matter depletion, fertilizers (mineral and organic) play a key role in preserving healthy soils and preventing soil degradation. The objective could read: “**Managing fertilizers to maintain or increase organic matter levels and the pool of plant-available essential nutrients in cultivated soils**”.

Aim of CoCoFe

The invitation to the CoCoFe consultation states that “the focus [of the Code of Conduct] is more on discouraging fertilizer overuse whereas a second document, to be developed later, will address scenarios with low or no fertilizer use under the topic of integrated soil fertility management”. We strongly believe that **overuse and underuse are equally important challenges**. They both reflect unsustainable practices and, as such, should be addressed in the Code of Conduct.

In addition, this statement puts emphasis on the fertilizer application rate. **While rate is an important component of efficient and effective fertilizer management, the other 3 areas of fertilizer management (source, time and place) should be paid as much attention.**

Good fertilizer management performance can only be achieved by implementing fertilizer best management practices (BMPs) in those four areas.

- Right Source – Choose plant-available nutrient forms (organic and mineral) that provide a balanced supply of all essential nutrients with release matched to crop demand.
- Right Rate – Ensure an adequate amount of all limiting nutrients is applied to meet plant requirements in relation to yield and quality goals.
- Right Time – Time nutrient applications considering the interactions of crop uptake, soil supply, environmental risks, and field operation logistics.
- Right Place – Place nutrients to take advantage of the root-soil dynamics considering nutrient movement, spatial variability within the field, and potential to minimize nutrient losses from the field.

We suggest rewording CoCoFe's focus as **“Encouraging efficient and effective fertilizer use”**. Depending on the country, or the farming system within a country, the focus may be more on overuse or underuse when it will come to translating the Code of Conduct in practical recommendations.

How should be the CoCoFe be structured to have the maximum positive impact?

The Code of Conduct should reinforce and elaborate on the key references to fertilizers in [FAO's Voluntary Guidelines for Sustainable Soil Management \(VGSSM\)](#).

CoCoFe should provide scientific principles for the good management of fertilizers. These **principles should be universal** (across geographies and farming systems). At a later stage, the Code of Conduct should be supplemented by regional or national manuals that would provide more practical recommendations (fertilizer BMPs) to farmers and their advisors.

The fertilizer industry has developed its own guidelines for sustainable fertilizer management, called **“4R Nutrient Stewardship”**, a framework for applying the right nutrient source, at the right rate, at the right time, in the right place, to achieve improved sustainability. Implementation of the 4Rs at the local level requires adoption of site- and crop-specific BMPs in the 4 areas of nutrient management. See the [IFA/WFO/GACSA Nutrient Management Handbook](#) for more details.

4R Nutrient Stewardship has been adopted by key stakeholders, including farmers organizations and farmers advisors. For instance, nutrient stewardship is part of the curriculum for the [Certified Crop Adviser \(CCA\)](#) programme of the American Society of Agronomy (ASA). The 4Rs have also been successfully included in public-private partnerships like [FertCare](#) in Australia, the 4R Plus Initiative (4R Best Management Practices plus mitigation conservation practices) in Iowa, or in the Lake Erie watershed – to just name a few. The local fertilizer industry has actively participated in helping to set up trainings and certifications for these programmes.

CoCoFe would benefit from building on industry's 4R Nutrient Stewardship Framework.

Who would be the best audience for the CoCoFe to meet our objectives and how could we broaden and diversify this audience to increase its influence?

Should the Code of Conduct be composed of universal scientific principles/technical guidelines (as recommended above), **the primary audience would be policymakers and regulators**, who are responsible for designing national policies, strategies and regulatory frameworks in relation to agriculture and fertilizers.

The secondary audience would be made of scientists and the fertilizer industry, who are involved in developing fertilizer recommendations, fertilizer products and formulations, decision-making support tools, etc.

The tertiary audience would be composed of farmers and their advisors (e.g. extension services, fertilizer retailers, NGOs), whose main interest would be in subsequent practical recommendations/manuals.

What should the scope of the CoCoFe be? Which nutrient input sources should be included; only synthetic fertilizers, or also manure, biosolids, compost, etc.? Should other products such as bio-stimulants, nitrification inhibitors, urease inhibitors, etc., be included as well?

The scope of **CoCoFe should consider all sources of nutrients used to feed plants**, i.e. mineral fertilizers, organic sources of nutrients (manure, compost, biosolids, etc.) and combinations thereof (organo-minerals). A Code of Conduct restricted to mineral fertilizers only would be counterproductive as **sustainable fertilization practices require integrating organic and mineral nutrient sources, using organic sources available on the farm (or nearby) and supplementing them with mineral fertilizers to reach the farmer's yield goal**. This is part of the Integrated Soil Fertility Management (ISFM) strategy, a concept that should be supported by CoCoFe.

The Code of Conduct should also cover all essential nutrients (macro- and micronutrients) as any deficiency in one nutrient can impact the use efficiency and effectiveness of the others.

Additives aimed at improving nutrient use efficiency such as inhibitors, polymer coatings and biostimulants should be included as well, reflecting CoCoFe's 2nd objective which is about improving nutrient use efficiency.

Note: The term "synthetic" fertilizers is inappropriate to define "mineral" fertilizers as several commercial mineral fertilizers are not the result of a chemical/synthetic process.

Will the CoCoFe assist in promoting responsible and judicious use of fertilizers? Why or why not? What other suggestions do you have to help the CoCoFe meet our objectives?

If the Code of Conduct spells out the scientific principles that should apply to fertilizer management, and if stakeholders adopt these principles and translate them in practical site- and crop-specific recommendations, then CoCoFe is likely to contribute to the responsible and judicious use of fertilizers. It should be kept in mind that, today, the main challenge is in developing countries. Therefore, the Code of Conduct should be relevant to them. Considering that two thirds of IFA members are in developing and emerging economies, IFA can play an important role in promoting CoCoFe.

What would be a good way to measure or quantify the progress of distribution and adoption of the CoCoFe?

There is definitively a need for monitoring adoption, promotion and implementation of CoCoFe (or CoCoFe-compatible schemes) by relevant stakeholders. A number of indicators could be tracked in this connection: number of countries having translated the Code of Conduct in their national fertilizer strategy; buy-in by the fertilizer industry; review (and revision as needed) of national fertilizer recommendations consistent with CoCoFe's principles; development of

decision-making support tools consistent with CoCoFe's principles; percentage of farmers receiving advice compatible with CoCoFe's principles; percentage of the cultivated area fertilized according to CoCoFe's principles; etc. Out of this list of proposed indicators, outreach to farmers may be the most relevant one if CoCoFe is to make an impact at the field level.

Keeping in mind that the CoCoFe will serve as a guiding framework for all Member States, what should be included in order for the code of conduct to help address different stakeholders?

The Code of Conduct should provide universal principles. Member States should then translate these principles into their national fertilizer strategy and in site- and crop-specific fertilizer recommendations. In order to have a meaningful impact, the Code of Conduct should encourage multi-stakeholder dialogue at the national level and partnership towards commonly agreed national or sub-national objectives.

Next Steps

We have well noted that the Intergovernmental Technical Panel on Soils (ITPS) has been tasked to develop the CoCoFe. Because ITPS is mostly composed of soil scientists, we would like to suggest that the Panel invites crop nutrition scientists and fertilizer experts to join the steering group in order to ensure that all required fields of expertise are properly represented during the development process. For instance, we believe that the steering group would benefit from the scientific expertise of the International Plant Nutrition Institute (IPNI). IFA is also ready to recommend highly-respected experts as needed.