

Brussels, 1 February 2018

Comments from Fertilizers Europe to the online consultation of the FAO for developing the Code of Conduct for the Management of Fertilizers (CoCoFe)

Fertilizers Europe represents the majority of fertilizer producers in Europe and is recognized as the dedicated industry source of information on mineral fertilizers. The association communicates with a wide variety of institutions, legislators, stakeholders and members of the public who seek information on fertilizer technology and topics relating to today's agricultural, environmental and economic challenges. The Fertilizers Europe website provides information on subjects of relevance to all those interested in fertilizers contributing to food security. "Infinite Fertilizers" guides the European fertilizer industry's initiatives to ensure that Europe's farmers have access to a variety of safe, high quality, locally produced fertilizers, as well as information on their use, environmental impact and nutrient recycling opportunities.

- 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?

➤ Objectives proposed by the FAO

The objectives proposed by the FAO should be modified accordingly:

1. *Increasing global food production*

Reasoning: it is broadly agreed that food production will have to increase significantly to ensure food security worldwide. From that perspective maintaining current food production would not be sufficient.

2. *Optimizing efficient and effective use of all plant nutrients to enhance sustainable agriculture*

Reasoning: the effectiveness in increasing crop yields is key to reach sustainable agriculture worldwide.

3. *Preventing poor use of fertilizers in order to minimize environmental impacts associated with nutrient losses to the environment, while acknowledging the environmental benefits also provided by the use of fertilizers*

Reasoning: Fertilizers in general and mineral fertilizers especially are instrumental in contributing to food security worldwide. Thanks to the use of fertilizers, agriculture production becomes more efficient, thus giving more space for forests to grow.

4. *Ensuring food safety by assessing and managing risks from non-nutritive trace elements and organic contaminants in fertilizers*

Reasoning: Any objective focusing on non-nutritive elements in fertilizers must not only look at heavy metals, which are relevant a.o. for mineral fertilizers, but also at organic contaminants and pathogens. In Europe, nutrient recycling initiatives are increasing, which make it necessary to also limit the presence of organic contaminants and pathogens (such as E.coli, salmonella or pharmaceutical residues). In addition, objectives 4 and 5 are closely related and quite redundant. We would like to suggest merging them into one single objective

In addition, we suggest adding 2 new objectives:

5. Improving food quality and nutrition security through optimal use of plant nutrients

Reasoning: Adding a reference to food quality would be useful as good fertilizer management practices can influence positively nutritional quality of harvested crops.

6. Managing fertilizers to maintain or increase soil structure and fertility

Reasoning: An objective referring to the maintenance or enhancement of soil quality should be added. 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 providing nutrients and organic matter to the soil, fertilizers (mineral and organic) play a key role in preserving healthy soils and preventing soil degradation.

➤ **Second document to be developed later by the FAO**

Fertilizers Europe strongly discourages the FAO from developing “a second document, [which would] address scenarios with low or no fertilizer use under the topic of integrated soil fertility management”. First reason is that under-use of fertilizers cannot be dissociated from over-use. Second, in the European context, this document could be understood as a validation of the misbelief that low/no fertilizer use would be sustainable. However, it is obvious that such an approach would go against the fact that fertilizers are used to fill the nutrient needs of the crops grown by farmers, in order for growers to achieve good yields and high quality crops. Scientific findings comparing fertilized with unfertilized land also indicate that no or low fertilizer use would not be the right way forward for the following reasons:

- Efficient food production: yields are impossible to maintain if the exported nutrients are not replaced, and it would lead to soil depletion. Increasing population means that an increased production level is needed and for that we need a growing nutrient cycle. This is not achievable because even in a best case where 100% recycling of nutrients and 0% losses, the amount of nutrient will never grow. Moreover, the nutrients cycle cannot be closed because part of the nutrients are fixed and will not continue to move in the cycle (for example, parts are fixed in the human body). In addition, organic material suitable for fertilizer is a finite resource in practice. There is simply not enough manure, compost, and nutrient rich green fertilizer aroundⁱ.
- Carbon storage in soils: It has been demonstrated that carbon levels actually decline mostly in farming practices where no fertilizers are used. The fact is that in farming without fertilizer; the yields are lower, resulting also in fewer crop residues that are raw materials for humus formation. Nitrogen fertilization limits this decline as compared to an unfertilized control, and carbon levels remain higher than without fertilizationⁱⁱ.

- Resource use: organic and mineral fertilizers are complementary products. Farmers first use the manure or slurry they have available to meet the nutritional needs of their crops. They then employ mineral fertilizers to make good any nutrient shortfall.

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

The CoCoFe should include broad recommendations and general principles on what should be considered when designing strategies to manage fertilizers sustainably, which would then have to be adapted by regional agencies and national authorities to the local farming conditions. It should provide guidance at the regulatory level to outline the roles and responsibilities of the multiple stakeholders involved in the entire value chain. The CoCoFe could be structured along the following chapters:

- 1) **Optimization of fertilizer use in order to increase food production globally**, since the CoCoFe should recognize the instrumental contribution of fertilization to global food security and global nutrition.
- 2) **Optimizing efficient and effective use of plant nutrients to enhance sustainable agriculture**, knowing that the reasons of the limited effectiveness/efficiency in the use of fertilizers can vary from situation to situation. However some general causes could be identified in a specific chapter: uncertainty of the nutrient content of organic fertilizers, limited knowledge of their nutrient availability after application, limited awareness of the cost-benefit of a better nutrient planning, great number of information required for detailed planning at field level, lack of technical assistance to farmers. It should also be taken into account that all essential plant nutrients have an influence on the yield level. A *sustainable* level of nitrogen fertilization could become *unsustainable* if another nutrient is missing and thus limiting the yield.
- 3) **Prevention of poor use of fertilizers in order to minimize use-related environmental impacts, with a strong focus on existing scientific findings**. For instance, several trials have shown that if nitrogen application is done in quantities that correspond to the nitrogen requirements of the crop, then leaching is not greater than from unfertilized landⁱⁱⁱ.
- 4) **Focus on options and approaches, which have the most rapid environmental impact – while yields and quality are maintained**. Future sustainability in agriculture (in view of SDG 2) can only be ensured if there are broad incentives towards the continuous development of principles for a smarter, more efficient and effective use of production tools in farming with greater precision. This can be achieved by striving for a full utilization of nutrients, but also of energy and water, together with appropriate conservation of the soil and environment.

The CoCoFe guiding principles should be:

- Understandable and applicable,
- The basis for guidelines, which will have to be transformed into concrete schemes in order to be implemented at local level, depending on the country, or the farming system within a country.
- Supported by an Advisory Committee, composed of representatives of the scientific and academic community, leading scientists on crop nutrition worldwide (TFRN, IPNI), farmers' organizations (WFO), NGOs and industry representatives (IFA).

- Emphasizing the use of scientific evidence to define efficacy of inputs in providing plant available nutrients, and the efficacy of nutrient application practices in terms of the full set of their impacts on the three pillars of sustainability (people, planet, profit).
- **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?**

The CoCoFe should be both developed and disseminated thanks to a multi-actor approach i.e. the cooperation of different stakeholders. It should also build upon existing expertise of leading scientists on crop nutrition worldwide (TFRN, IPNI...), farmers' organizations (such as the World Farmers' Organization) and industry representatives (such as IFA, TFI or Fertilizers Europe). The best audience should be government at the policy level, fertilizer industry, NGOs, the academic community including students and training centers for farmers at the technical level.

The key aspect is of course the communication with farmers and growers, which is beneficial from the initial development of the CoCoFe right through to its implementation. Another major role could be played by extension services. Listening to farmers' needs is necessary for an optimal promotion and development of new solutions and tools. It would also be up to agricultural advisors throughout the different regions of the globe to disseminate the CoCoFe by developing demonstration projects or operational groups towards the target public, the farmers, and, in particular to make the CoCoFe available in the region's language/tailored on the specific conditions of the own region.

- **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 should be to promote resource-efficient farming which makes the best use of local (mainly organic) and external resources. Therefore, all nutrient input sources (i.e. mineral and organic) should be included on a strictly scientific basis. Also all essential plant nutrients (macro- and micronutrients) should be considered, in order to have a broad and holistic approach of crop nutrition. Other categories of products such as biostimulants, nitrification inhibitors and urease inhibitors should also be included. The responsible and judicious use of fertilizers can only be promoted by taking into account all options and products, which are available to farmers. This is especially true because the CoCoFe could also address the so-called "Nutrient Nexus". Reduced nutrient losses and improved nutrient use efficiency across all sectors simultaneously provide the foundation for a greener economy to produce more food and energy while reducing environmental pollution^{iv}. Through its broad scope, the CoCoFe should also take a close look at the use of manure as fertilizer on farms, as for example even today most of the phosphorus used as fertilizer in the EU comes from manure, as does a substantial proportion of the nitrogen^v.

- 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?

➤ **Promoting responsible and judicious use of fertilizers**

The CoCoFe could be successful in promoting responsible and judicious use of fertilizers only if its audience, its scope and its aim are clearly defined, agreed and well supported by the target groups. It could only bring added-value to existing knowledge and practices by being based on rigorous scientific findings, and by being adaptable (in a second step) to regional and local conditions.

➤ **Other suggestions**

More information about nutrient management and balancing crop and environmental needs can be found on the website of Fertilizers Europe:

https://issuu.com/efma2/docs/nutrient_stewardship_sept_2016_webs.

Bibliography

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ⁱⁱⁱ Kirchmann, H., Bergström L., Kätterer, T. and Andersson, R. (2016) Dreams of Organic Farming – Facts and Myths, 175pp

^{iv} Alexandratos, N. and Bruinsma, J. (2012), "World Agriculture Towards 2030/2050: The 2012 Revision," Food and Agriculture Organization of the United Nations, ESA Working Paper No. 12-03.

^v Buckwell, A., and Nadeu, E. (2016). Nutrient Recovery and Reuse (NRR) in European agriculture. A review of the issues, opportunities, and actions. RISE Foundation, Brussels.