

February 27, 2019

**Object: Comments on Draft Resolution for UNEA4 on “Sustainable Nitrogen Management”**

The International Fertilizer Association is accredited to UN Environment.

The International Fertilizer Association appreciates the focus of this resolution on Sustainable Nitrogen Management.

Given the numerous uses of nitrogen in industrial transformation, energy production and plant nutrition, a proposal to explore and consider options for improved international coordination, coherent capacity building and the promotion of better understanding of the various sources that influence the nitrogen cycle, in view of the development of a “coherent and evidence-based policy approach,” is timely.

The objective of promoting a better understanding should be identified in the resolution as the biggest priority, as an improved understanding of this very complex issue can then shape the best policy approach. UN Environment is already supporting an ambitious research and policy initiative, the International Nitrogen Management System (INMS), which has among its objectives, a quantification of both the benefits and the adverse effects of nitrogen, which, when completed in 2021 would allow for a more coherent and evidence-based policy approach.

Given the important role of N in agriculture, IFA and its members are heavily engaged in efforts to improve nutrient uptake by crops and minimize nutrient losses, and we aim to improve our understanding of how best to measure, monitor and improve nutrient use efficiency (NUE), calculated as the ratio between the N output and the N input.

N cycles are complex, biological cycles which are, by definition, “leaky” systems, largely due to microbiological activity. Soils are natural systems, constantly subjected to changes due to the combined effects of climate incidences, plant growth and management practices. The plant’s uptake of N varies depending on soil, climate and application strategies; with the latter already leading to significant increases in N-uptake and crop NUE. Globally, NUE is assessed at around 45-50% (Lassaletta et al, 2014 and Zhang et al, 2015).

In most developed countries, NUE has been improving for 3 decades. In China, the world’s largest fertilizer-consuming country, NUE has begun to improve, whereas this is not yet the case in India.

Other regions such as Sub-Saharan Africa, have a long history of nutrient deficits (more N removed than added to soils).

While this draft resolution refers to the pollution threats resulting from anthropogenic reactive nitrogen, it also bears emphasizing that **underuse of N fertilizers**, which also occurs in other regions, such as Eastern Europe, Central Asia and parts of Latin America, not only serves as a substantial drag on agricultural yields, but also leads to nutrient mining of soils, which has significant adverse impacts on the environment. These very real threats need to be recognized and addressed.

NUE trends demonstrate that improvements stem from economic growth which is linked to an increased focus on best management practices (Zhang et al. Managing nitrogen for sustainable development, *Nature* 528, 51-59 (2015)). Improved outreach to farmers and a supportive policy framework also play an important role in enhancing efficient fertilizer use. Best management practices, based on the **4R principles** (using the right nutrient source, at the right dose, at the right time, in the right location), have a clear demonstrable positive impact in NUE, and must therefore be central to any possible policy measures, incentive based or voluntary programs. It is therefore important to recognize **the value of integrated soil and fertilizer management**, such as the 4Rs, as an integral part of sustainable nitrogen management, and call for more wide-spread adoption of these management practices.

With ongoing improvements in NUE in agricultural production, opportunities to further reduce reactive N released to the environment, post human-consumption also merit increasing attention: in India, for example, the amount of N pollution stemming from untreated wastewater, is considered to be almost ten times higher than that from agriculture (Nandula Raghuram, *Business Standard Delhi*, 15 January, 2019).

### **About the International Fertilizer Association**

The International Fertilizer Association (IFA) is the only global fertilizer association with a membership of more than 500 entities, encompassing all actors in the fertilizer value chain: producers, traders, distributors, service providers, advisors, research organizations and NGOs. IFA promotes the industry's engagement in sustainable agricultural practices and the efficient and responsible production, distribution and use of plant nutrients to advance global food security and sustainable development goals.  
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