Fertilisers Efficiency Enhancers

CALL FOR EVIDENCE

8 March 2024

Fertilisers Efficiency Enhancers recommends adding the use of Nitrification Inhibitors (NI) to Annex II 'CODE(S) OF GOOD AGRICULTURAL PRACTICE' of the revised Nitrates Directive

Fertilisers Efficiency Enhancers, a sector group of Cefic, represents the value chain of nitrogen stabilisers and other efficiency enhancers in Europe and promotes the agronomic and environmental benefits of nutrient enhancers in fertiliser applications. We welcome the opportunity to provide input to the Call for Evidence on the evaluation of Nitrates Directive (Ares(2023)8213678).

As a sector group of Cefic, we support the objective of the Directive, which in our view has been implemented in an efficient manner overall, and are willing to contribute to its revision. The Directive was first established in 1991, followed by two amendments in 2003 and 2008, thus requires amendments which reflect the current agricultural practices and available technologies.

Based on the data provided below, our recommendation is that the use of Nitrification Inhibitors (NI) should be added to Annex II 'CODE(S) OF GOOD AGRICULTURAL PRACTICE' upon the revision of the Directive. This would contribute to achieve to a greater extent the objectives of the Nitrates Directive.

The role of Nitrification Inhibitors (NI) to reduce nitrate leaching

Current research shows that NI can reduce nitrate leaching by 47%.

For the latest data and findings on nitrate leaching reduction enabled by the use of NI, we would like to draw your attention to:

Chen, *et al.* (2023) https://doi.org/10.1088/1748-9326/acb833

The paper provides a systematic and global synthesis of the current evidence on the effect of Enhanced Efficiency Fertilisers (EEF), including NI.

Concerning the reduction of nitrate leaching by NI, this paper states: '*MSR* (meta-analysis and systematic reviews) *showing the best quality score for this impact reported that the use of nitrification inhibitor could reduce dissolve inorganic N and NO3 leaching by 47% (95% CI: [38%, 56%] and 48% (95% CI: [32%, 59%], respectively ….*' .

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Additional benefits of NIs

The use of NI not only leads to a reduction of NO3 (nitrogen) leaching from mineral and organic nitrogen fertilisers (or 'N fertilisers'), but also an abatement of N2O (nitrous oxide) emissions. The Chen *et al.* (2023) study cites four MSRs showing a reduction of N2O by NI between 34 and 44%. Due to reduction of direct as well as indirect (via NO3 leaching) N2O emissions, the CO2 footprint (expressed as CO2 equivalents) of agricultural and horticultural productions systems fertilised with N fertilisers, which is treated with NI, can significantly be reduced without any negative impact on crop quality level and yield.

In fact, thanks to the reduction of N losses, more N is available for the crops, which improves Nitrogen Use Efficiency (NUE). A higher NUE will result in higher yields (at the same N level as untreated N fertilisers) or allow farmers to reach the same yield level achieved using untreated N fertilisers but with a reduced N amount, thanks to the use of NI-treated N fertilisers. The higher NUE of NI-treated fertilisers leads to a better return on investments.

In conclusion

Inclusion of NI technology into Annex II of the Nitrates Directive, as well as the promotion of their use via other legislative acts (see inclusion in CAP strategic plans adopted by some countries such as Spain[1]), would enable the European Union to further decrease emissions of nitrates and their detrimental impact on the environment.

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[1] https://www.mapa.gob.es/es/pac/pac-2023-2027/plan-estrategico-v21_tcm30-659518.pdf