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Fertilisers Efficiency Enhancers' contribution to the public consultation on the updated rules on the use of certain fertilising materials from livestock manure (RENURE)

Fertilisers Efficiency Enhancers recommends adding the use of Nitrification Inhibitors (NI) to Annex III 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 public consultation to amend Annex III of the Nitrates Directive with regards to the rules on the use of certain fertilising materials from livestock manure (RENURE).

As the Commission currently aims at the inclusion of processed manure into Annex III of the Nitrates Directive **we recommend the introduction of Nitrification Inhibitors (NI) as an additional tool in Annex III** for the application of fertilising materials based on processed manure. Such nitrogen containing fertilisers have a high potential for nitrogen losses (as nitrates and nitrous oxide), which could significantly be reduced by the use of NI. **The use of NI can contribute to achieve the objectives of the Nitrates Directive, helping prevent nitrate leaching.**

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

A recent report by Trinomics¹ also presents the benefits of using NI applied to manure to reduce nitrate leaching.

Moreover, it should be noted that the European Commission's Joint Research Centre (JRC) stated that under certain conditions RENURE fertilisers have a similar nitrogen leaching potential and agronomic

¹Trinomics B.V., 'Pricing agricultural emissions and rewarding climate action in the agri-food value chain', (European Commission, 2023) (https://climate.ec.europa.eu/document/996c24d8-9004-4c4e-b637-60b384ae4814_en), see page 25 and 142 for example.



efficiency to chemical fertilisers². Thus, the inclusion into Annex III of the use of NI technology in the management of RENURE would be consistent with the objectives of the Nitrates Directive. Provided that NI are taken into account as a valuable tool to reduce leaching, we can support the draft provision to use RENURE fertilisers in amounts higher than 170 kg N per hectare.

Additional benefits of NIs

The use of NI not only leads to a reduction of NO₃ (nitrates) leaching from mineral and organic nitrogen fertilisers (or 'N fertilisers'), but also to 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 production systems fertilised with N fertilisers-treated with NI, can significantly be reduced without any negative impact on crop quality 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 either result in higher yields compared to untreated N fertiliser application (identical N application rate) or allow farmers to reach the same yield compared to untreated N fertiliser application (lower N application rate in NI treated fertiliser). The higher NUE of NI-treated fertilisers leads to a better return on investment.

In conclusion

Inclusion of NIs into Annex III of the Nitrates Directive, as well as the promotion of their use via other legislative acts (see inclusion in CAP strategic plans adopted by countries such as [Spain](#)³) would enable the European Union to further decrease emissions of nitrates and their detrimental impact on the environment.

² Huygens D, *et al.*, *Technical proposals for the safe use of processed manure above the threshold established for Nitrate Vulnerable Zones by the Nitrates Directive (91/676/EEC)*, (Joint Research Centre, European Commission) page 13 (<https://publications.jrc.ec.europa.eu/repository/handle/JRC121636>)

³ https://www.mapa.gob.es/es/pac/pac-2023-2027/plan-estrategico-v21_tcm30-659518.pdf

