



FAIRWAY

FARMERS, ADVISORS, LOCAL AND REGIONAL MANAGERS, AND EU POLICY MAKERS

Policies that include measures to reduce nitrate leaching to ground and surface waters should take into the risk of pollution swapping to other nutrient and greenhouse gas emissions. An integrated approach is needed, so that the environmental targets in different policies are met.

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FURTHER DETAILS

[Ros et al. 2020. Identification of most promising measures and practices: 2. Reduction nitrate transport from agricultural land to groundwater and surface waters by management practices. FAIRWAY Deliverable 4.3, 72 pp](#)

Ros et al. 2021. Exploring the potential of measures to reduce nitrate leaching in the EU (in prep.)

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KEY MESSAGE

Implementation of measures to reduce nitrate losses should consider not only their effectiveness, and costs, but also the likelihood of (unwanted) side-effects such as pollution swapping to emissions of ammonia, nitrous oxide and phosphate.

EXPLANATION

Implementation of policies such as the Water Framework, Groundwater, Drinking Water and Nitrates Directives promotes the use of measures to reduce nitrate losses to ground and surface waters. However, some of these measures may increase the levels of greenhouse gas emissions, contrary to the objectives of other climate change related policies.

EVIDENCE

FAIRWAY conducted a review of existing meta-analyses and quantitative studies on measures to reduce nitrate losses to ground and surface waters. The results showed that there is a lot of information available on the effectiveness of measures on nitrate leaching and this is often in combination with their effects on other N parameters such as nitrous oxide emissions or increasing ammonia volatilization. Some studies showed that measures to decrease nitrate leaching (e.g. incorporation of a cover crop into the soil) can increase other N losses and may enhance greenhouse gas emissions. This is true for measures at both the field and farm scales.



A winter crop may decrease nitrate leaching but may increase nitrous oxide emission after it is incorporated into the soil.