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Evaluation of potential nitrogen mineralization and relations to static and dynamic soil properties from arable agricultural soils following ten years in Flanders, Belgium

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Soil N mineralization is a crucial parameter for efficient N management in intensive agriculture and is determined by a combination of static or inherent (mineralogy, texture) and dynamic soil properties. We measured N mineralization potential from native soil organic matter (SOM) of 21 agricultural fields under intensive management in 2018-2019 and compared these to N mineralization potential measured on the exact locations in these fields in 2009. We hypothesized that changes in N mineralization over this decadal period could be explained by differences in land management and would be reflected in soil biochemical and physical properties. The results showed that potential N mineralization assessed in 2018-2019 was higher than measured in 2009. However, the changes of N mineralization potential was not significantly correlated with pH-KCl, N total, TOC, C: N ratio and microbial activities (C_{mic}). Likewise, it was not significantly associated with texture (% sand, % silt and % clay). Therefore, in this study, the potential of N mineralization could be more affected by changes in land management practices (i.e. fertilization, crop rotations and soil tillage) than soil properties following ten years.