

EGU2020-22658

<https://doi.org/10.5194/egusphere-egu2020-22658>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



How does measuring methodology impact N mineralization in controlled conditions and relations to soil biological parameters: air dried versus fresh soil

Oka Ardiana Banaty^{1,2}, Koen Willekens³, and Stefaan De Neve¹

¹Department of Environment, Faculty of Bioscience Engineering, Ghent University, Gent, Belgium
(okaardia.okaardianabanaty@ugent.be)

²Indonesian Agency of Agricultural Research and Development (IAARD), Ministry of Agriculture, Indonesia

³Institute for Agricultural and Fisheries Research (ILVO), Plant Sciences Unit, Crop Husbandry and Environment, Merelbeke, Belgium

Predictions of N mineralization are still difficult but maybe this is due to the methodologies. Many soil tests have been proposed to predict N mineralization between field and laboratory experiment. Incubations of soil in the laboratory under controlled environmental conditions are most commonly used to assess N mineralization rates both from SOM and from added organic materials. However, predicting N mineralization due to the methods (the impact of using air-dried and fresh soil) has never been assessed before. If the results differ between the methods commonly used, there is a serious problem. Therefore, the objective of this study was to evaluate the influence of the incubation methods (air-dried vs fresh soil) to predict N mineralization. The N mineralization potential from fifteen agricultural soils in West and East Flanders – Belgium, were determined by aerobic incubation methods used air-dried and fresh soil at (20 – 25^oC) for 84-days in the laboratory. The results indicated that total mineral nitrogen (NH₄⁺ + NO₃⁻) concentrations and carbon content of microbial biomass (MBC) did not differ significantly between these methods. Nitrogen was mineralized in fresh soil incubations (0.36 mg N. kg⁻¹ soil day⁻¹) while in air-dried soil (0.31 mg N kg⁻¹ soil day⁻¹). Thus, the results generate that it may be conceivable to predict N mineralization by these two methods in controlled conditions.