



Assessment of soil potential for microbial nitrogen cycling using quantitative PCR

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Nitrogen is an important nutrient for the synthesis of macromolecules, such as nucleic acids and proteins, in all organisms. Nitrogen cycling is essential for the production of different forms of nitrogenous molecules used by various organisms in the soil as available nitrogen sources. While nitrogen-fixing bacteria can utilize N₂ as a nitrogen source, other microbes and plants need to assimilate N from fixed forms, e.g. ammonia or nitrate. Nitrogen cycling is largely derived by microbial activity in the soil. Examples include the reduction of N₂ to ammonia by nitrogen fixation, production of nitrate by nitrification and the removal of available nitrogenous compounds by denitrification. We measured the potential of agricultural soils under various management practices to cycle nitrogen by measuring the abundance of functional genes involved in the nitrogen cycle. We report on the suitability of PCR-based methods as indicators of soil function potential.