THE UNIVERSITY OF MELBOURNE

FACULTY OF VETERINARY & AGRICULTURAL SCIENCES

Dissimilatory nitrate reduction to ammonium, denitrification and anaerobic ammonium oxidation in paddy soil

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Background and methods

DNRA: Dissimilatory nitrate reduction to ammonium
Anammox: Anaerobic ammonium oxidation

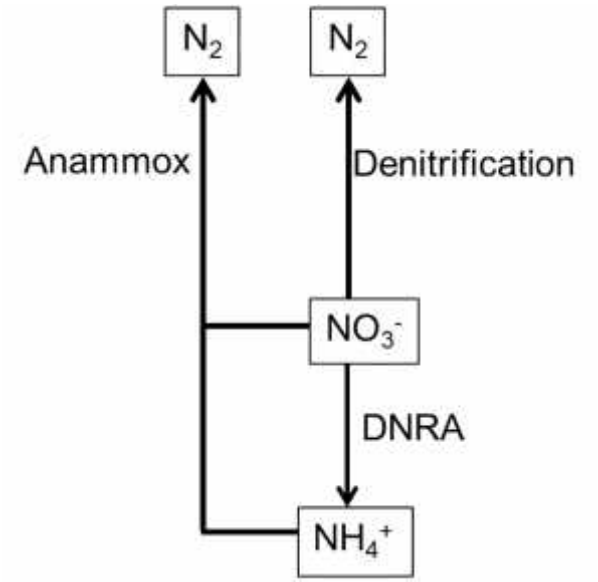

Fig.1. Microbial N transformation pathways in paddy soil

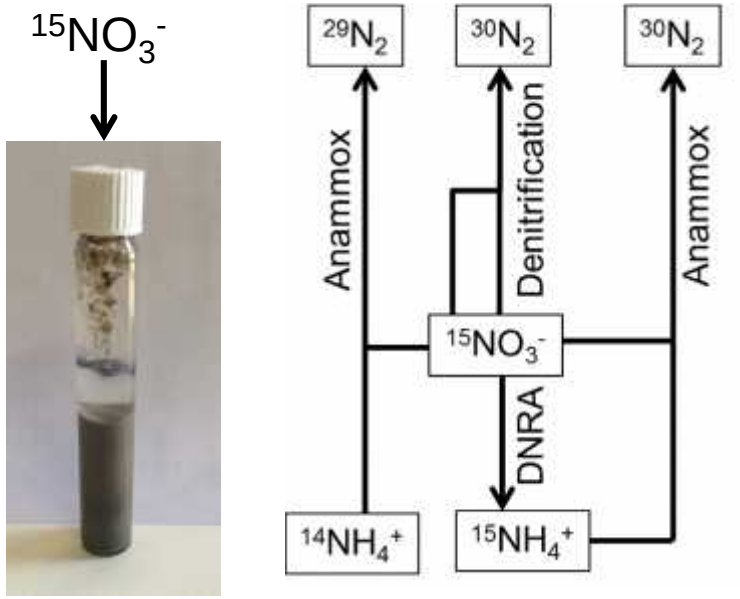

Fig.2. Microbial N transformation pathways in incubation vials with $^{15}NO_3^-$ tracer

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Results and Conclusions

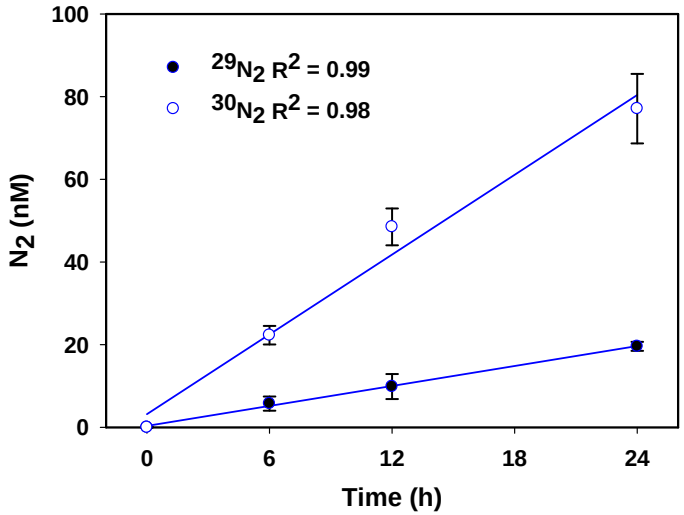

Fig.3. Accumulation of $^{29}N_2$ and $^{30}N_2$ in vials.

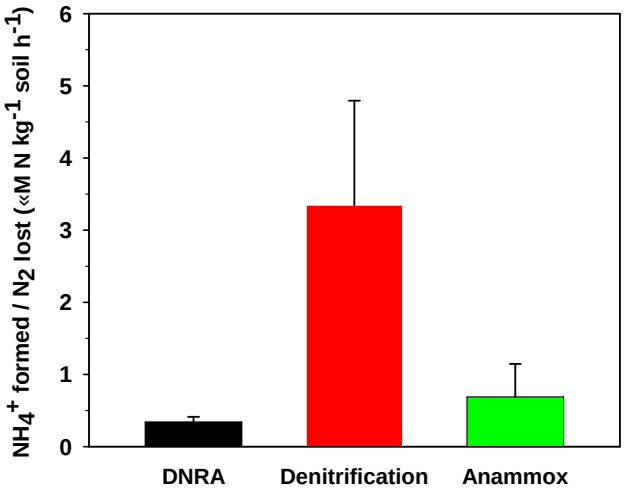

Fig.4. Rates for each of the processes.

- Denitrification (3.35 µM N_2 hr^{-1} kg^{-1} soil) dominates N transformation during the first week of flooding of rice paddies.
- DNRA (0.34 µM NH_4^+-N hr^{-1} kg^{-1} soil) and anammox (0.65 µM N_2 hr^{-1} kg^{-1} soil) are also important N transformation pathways.