



Towards understanding the effects of crop production practices on soil nitrogen fixation and denitrification

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Soil productivity can be highly influenced by the composition and activity of its microbial communities. Certain crop production practices suppress microbial processes, e.g. nitrogen fixation is suppressed due to excessive application of chemical supplements of N (ammonium, nitrate), whereas removal of nitrogen by denitrification may be enhanced by such conditions. We optimise and use PCR-based techniques to analyse the soil potential for nitrogen fixation and denitrification and seek ways to enhance microbial nitrogen fixation by managing the amount and form of N applied to the soil. These techniques are being optimised for Australian cotton production soils and will also be useful for determining the effects of different crop production strategies on microbial nitrogen cycling in such soils.