

much of the soil's nitrogen by making ammonium. Similarly, applied fertilisers are often ammonium based formulations.

The nitrification of this soil ammonium to nitrite is carried out by bacteria known as ammonium oxidisers (AO) or nitrifying bacteria. The role of these bacteria is therefore very important in determining the forms of N present in the soil and its potential fate.

As is the case with N-fixation and nitrification rates, there are differences among cotton cultivars in the abundance of AO bacteria associated with their roots (Figure 4).

SUMMING UP

- In soil it is the microbiology that is central to the processes involved in nutrient cycling, including N.
- Cotton cultivars are influencing processes involved in N cycling in the soil in close proximity to their root systems by manipulating the associated microbiology.
- Currently we do not know if the differences between cultivars in non-symbiotic N fixation, nitrification and ammonium oxidation rates are the result of changes in activity or structure of the rhizosphere microbial community. If cultivars are producing different quantities of root exudates then this might be expected to influence the populations and overall activity of the microbiota.
- Further, if the quality or chemical nature of the exudates is different then the composition of the rhizosphere microbial population may also be altered. It is likely, however, that both factors will be involved in a more complex relationship that also encompasses subtle differences in plant rooting and the soil environment.
- In the future, there may be potential to improve N use efficiency through cultivar selection to enhance N cycling microbiota. But the current best practise would be to follow the advice of your agronomist.
- Less time between up front fertiliser applications and planting, application of more of the crop N requirement in season, and the introduction of legumes and particularly green manured legumes are all generally considered to be good management practices to adopt.

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Winner of Round Table education award

A prestigious national Award for 'Best Collaboration with a Regional Focus' has been taken out by the Cotton Catchment Communities CRC (Cotton CRC) "Summer Scholarship Program".

Lisa Paul, Secretary of the Department of Education, Science and Training, presented the Business/Higher Education Round Table (BHERT) Award to Cotton CRC Chief Scientist, Professor Peter Gregg, during a gala awards ceremony in Sydney. This BHERT award reflects recognition by the chief executives of major Australian corporations, research organisations and the Vice Chancellors of Australian Universities.

The Cotton CRC "Summer Scholarship Program" provides new dimensions and opportunities for undergraduate students studying agriculture or related sciences at University. Students gain eight weeks paid work during their summer holidays, combining experience in a regional location and collaboration with a "real" scientist.

This enables scientists to expand their current projects by investigating smaller yet novel aspects of their science

Professor Gregg said that since the course began in 2000, 45 scholarships have been provided to motivated university students to conduct pilot projects.

This innovative education program has helped overcome the major problem of attracting future graduates as employees and postgraduate students to study in regional locations



Lisa Paul presents the award to Peter Gregg.

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