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The influence of organic amendments on the abundance of functional genes in cotton growing Australian soils

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Food and cash crops play important roles in Australia's economy with black, grey and red clay soil, widely used for growing cotton, wheat, corn and other crops in rotation. While the majority of cotton growers use nitrogen and phosphate fertilizers only in the form of agrochemicals, a few farmers experiment with the addition of manure or composted plant material before planting. We hypothesized that the use of such organic amendments would enhance the soil microbial function through increased microbial diversity and abundance, thus contribute to improved soil sustainability. To test the hypothesis, we collected soil samples from a cotton-growing farm where the grower has been using mostly agrochemicals and applied urea with and without the use of manure or compost. We used qPCR to estimate the abundance of functional genes in the soil. Our results show diverse reactions of functional groups related to the nitrogen cycle in response to the various inorganic and organic treatments. We will present these results and conclude regarding the short-term effects of organic amendments in vertisols.