



Biofertilization and Biocontrol in the fight against soilborne fungal root pathogens in Australian soils

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Control of soilborne fungal root pathogens that severely compromise cotton production and other crops worldwide has historically been through the use of synthetic fungicides and fertilizers, these often have hazardous implications for environmental and soil health. The search for sustainable alternatives has lead to heightened interest in biocontrol, using soil microorganisms that suppress the growth of phytopathogens directly and biofertilization, the use of microorganisms to increasing the nutrient availability in soils, increasing seedling vigour. Soil properties and consequently soil microbial properties are strongly impacted by agricultural practices, therefore we are isolating indigenous microorganisms from soils collected from ten different geographical locations within the Australian cotton-growing region. These differ vastly in soil type and management practices. Soils are being analysed to compare the abundance of phosphate solubilising, auxin producing and nitrogen cycling bacteria. Rhizospheric bacteria capable of plant growth promoting through a multiple actions are being isolated. In addition, a method for isolating soilborne fungal suppressive microbes directly from soil samples has been designed and is currently being used. Comparisons between agricultural practices and the plant growth promoting microbial component of soil microbiome will be reported on. We will discuss the microbial isolates identified, their modes of action and their potential use as biocontrol agents and/or biofertilizers in Australian cotton growing soils.