

# **Temporal Dynamics of Plant Specific Microbial Functions and Critical Periods of Biological Activity in Southern Australian Cropping Regions. (S03-vadakattu215002-Poster)**

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## **Abstract:**

Australian soils are low in biologically available organic carbon hence the majority of biological activity is concentrated near decomposing crop residues in a thin layer of surface soil and in rhizosphere. Since plant type has a critical role both directly and indirectly through changing the soil environment and in modifying biological communities, a plant specific approach is better suited for maximizing benefits from biological functions in these environments. The composition and metabolic capabilities of the soil microbial and faunal communities underlie the occurrence and rates of many soil processes such as disease suppression, nutrient mineralization and leaching losses. In a majority of dry land cropping regions moisture availability plays a critical role in determining the activity of both microflora and soil fauna and in southern Australia temporal patchiness in the favourable soil and environmental conditions, dictate the true significance of plant specific biological functions for crop productivity and soil health. For example, a better knowledge of the temporal dynamics of mineralization--immobilization processes is necessary to synchronize the nutrient availability to plant needs and restrict the losses through leaching. Similarly identification of critical periods for the various interactions between pathogen-soil biota-plant interactions is needed for promoting the natural disease suppressiveness in different southern Australian cropping regions. In this paper we will discuss examples of temporal dynamics of specific microbial functions related to plant nutrition and health.

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