

## **Nutrient Controlled Secondary Metabolite Interactions in the Rhizosphere**

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The rhizosphere microbiome provides a wide range of ecosystem services to maintain a healthy environment for plant growth. To better utilize and understand the potential of plant microbiomes for use in agricultural production, we elucidate chemical interactions between plants, their microbiome, and the environment. I will present my program at NC State University in which we investigate these interactions by using nutrient availability as a critical driver of rhizosphere interactions. Our methods involve incubations under controlled nutrient conditions for profiling and characterizing of exudates from roots and micro-organisms, especially secondary metabolites produced to compete and to extract nutrients (e.g., siderophores, antibiotics) and to communicate (e.g., quorum sensing compounds, chemo-attractants). We also develop and implement new methods to isolate exudates and study complex soil microbial communities and matrixes for analysis by liquid chromatography-mass spectrometry.