

## **Can Calcite Dissolving Bacteria Promote Pod Growth?**

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Calcium is critical for the development and stress response of a peanut pod. Calcium-deficiency leads to aborted embryo development and high susceptibility to soil-borne pathogens. Accumulating evidence indicates that microbes associated with plants can be used for growth promoting and biocontrol agents. Little is known about how the microbiome in soil affects calcium availability to peanuts. As a geocarpic plant, peanut pods grow in the same soil environment as roots do, which set an obstacle to distinguish pod-specific response to calcium deficiency from secondary responses derived from root physiology. Here, we describe a "Growth-in-Tube" system to support the growth of individual pegs on a peanut plant. This system can be used to study pod development with controlled microbial community and nutritional conditions. Our primary goal is to investigate pod-specific response to calcium starvation and isolate bacteria that can improve calcium uptake/availability.

We have isolated 65 strains of calcite dissolving bacteria (CDB) from peanut fields in Tifton, Georgia. These CDB can dissolve calcite using a plate assay and increase calcium availability in sand. Using the "Growth-in-Tube" system, we are investigating whether CDB strains can be used as a biofertilizer to enhance calcium availability in pegging zone and improve seed quality.