

Survey, Isolate and Apply Calcite Dissolving Bacteria as a New Form of Calcium Source.

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Calcium is a critical nutrient for proper peanut (*Arachis hypogaea*) pod development and an effective agent in enhancing resistance to fungal pathogens. Insufficient calcium within the peanut pegging zone during flowering can lead to embryo abortion, plant stress and reduction in seed quality. The current practice is to apply hundreds of pounds of gypsum or lime to fields during the start of peanut flowering. The application of this fertilizer is a large expense for farmers, which is expected to increase due to the current rise in transportation and manufacturing costs. To alleviate the need to apply gypsum, a group of calcite dissolving bacteria (CDB) have been isolated based on their ability to produce soluble calcium through the dissolution of calcite (mineral form of calcium). Native CDB have been identified in Tifton, GA. We also observed a negative correlation between soil calcium level and the abundance of CDB. Preliminary results showed that application of CDB in field soil increased the soluble calcium level and promoted seed germination. We aim to engineer these bacteria into a cost effective biofertilizer and fungicide through its innate ability to increase calcium levels.