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Project Title: Enhancement of Biological Control by Lysobacter enzymogenes C3.

PROJECT 1 ABSTRACT
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C3, a strain of the bacterial species *Lysobacter enzymogenes,* was consistently and highly efficacious in reducing the severity of Fusarium head blight (FHB) in over two-years of greenhouse experimentation, but field efficacy has been difficult to achieve using C3. The goal of this project is to identify strategies that will improve field efficacy using C3. The objectives are to identify application strategies to enhance efficacy of C3, assess the potential of combining C3 with other bacterial biocontrol agents, and identify cultural methods that will enhance antagonism by C3. A series of greenhouse and field experiments will be conducted to achieve these objectives. One approach to improving application of C3 will be to develop methods to derive higher cell concentrations in broth cultures used as treatment inoculum. One method will be to manipulate the concentration and composition of carbon compounds and other nutrient components in the broth medium. Another approach will be to physically concentrate the culture contents. The benefits of applying C3 as a tank mix with other FHB bacterial biocontrol agents (*Bacillus* strains) will be assessed, as will sequential application of the agents. In addition, *Pseudomonas* and *Bacillus* strains that can induce resistance in other crops will be tested in the greenhouse for FHB biocontrol potential and then evaluated in combination with C3. Efforts to improve procedures for culturing C3 are intended to identify carbon sources that cannot be utilized by *Fusarium graminearum* or culturing conditions that leave little or no residual nutrients for pathogen utilization.