Use of Biological Control Agents to Inhibit the Growth of Phytopathogenic Bacteria

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By the year 2050, the global population is expected to reach 9 billion. This poses serious issues for the global food supply which will need to double to meet the demands of the ever more populated planet. The soybean is one crop that offers a possible solution to this issue. They are one of the most important cash crops in the United States and offer a nutritious option for the growing population. Unfortunately, in 2016 approximately 82.29 million bushels of soybeans were lost to crop disease. This resulted in a huge economic loss for farmers and a significant reduction in the number of consumers benefited. The purpose of this project was to identify microorganisms that had the potential to be effective biological control agents. Using pathogens of rice, tomatoes, and onions, an experiment was conducted that would establish a procedure template, with hopes that results from the conducted trials would be representative of biological control agents in soybeans. The method of data collection was the measurement of the area of the zone of inhibition, which is indicative of the effectiveness of the antagonist bacteria as a biological control agent. Based on the data gathered from the experiment several specimens of interest were identified that will undergo further testing to determine the exact mechanism by which the microorganism affects the pathogen and from there in-vitro tissue trials will be conducted to determine how the interaction will affect the plant tissue.

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