

Kymbre Mitchell

*The Effects of Capture LFR on the Nitrogen-Fixing Bacterium Rhodospirillum rubrum in Reference to Corn Production*

The purpose of this research project was to determine the effect of Capture LFR, a commonly used insecticide in the Northeast Colorado agricultural community on *Rhodospirillum rubrum* (nitrogen-fixing bacterium) in corn crops. This benefitted mankind by determining the effects of insecticide toxicity on *Rhodospirillum rubrum* which could alter crop quality in production. The most important part of the researcher's procedure was the serial dilutions. This was the main portion of the experiment. Preparation of stock cultures and agar plates was before the serial dilutions. The bacterium was also inoculated with/without the insecticide, Capture LFR. After the dilutions were made the bacterium was plated on agar plates and incubated for 24-48 hours. The colonies were then counted and the area was cleaned up. With all the data collected, the data shows that the hypothesis was partially supported. Overall, the low dosage compared to the control showed an increase in the number of colonies. The medium dosage data was inconclusive. At  $10^5$  dilution there was an increase in bacterial growth while at  $10^{-6}$  through  $10^{-8}$  dilutions showed a decrease in bacterial growth. The high dosage showed the number of colonies to decrease when compared to the control. Through this research it appears that the recommended dosage of Capture LFR significantly decreases the growth of the good nitrogen-fixing bacterium in the soil which may lead to lower crop production. Decreased levels of Capture LFR shows increased growth of the good bacterium but further research would need to be conducted on its efficiency in treating the crop pests.