

Analysis of treatment against *Verticillium* in lettuce roots using bacterial isolates

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Verticillium is a fungus that causes disease in plants, more specifically lettuce for this experiment. The proper name of the disease *Verticillium* causes is *Verticillium* wilt, which is a considerable problem for lettuce growers. *Verticillium* is becoming more prominent in the Salinas Valley, leading to scientists attempting to find ways to put a halt to this plant disease. In our experiment, we decided to use beneficial bacteria to combat the disease in lettuce as bacteria is a much safer alternative to chemicals and pesticides. To start the study, we incubated 7 different bacteria on potato dextrose agar in order to use them as a treatment against the disease. After incubating the bacteria on Petri dishes, we created the 7 isolates, which included: SJL17-4, SJL17-1, SCL15-6, MCL20-5, SCL15-4, K61, and MCL20-2 for the treatment against the *Verticillium* wilt. The testing site was a field next to the facility, with young lettuce arranged in 4 rows. With each of the isolates, we inoculated 10 lettuce plants with 1 ml each before switching to the next isolate along with a negative control. This was

done for every row to have multiple results for each isolate. We waited 2 months after incubating to allow the lettuce to grow and as well as to let the isolates treat the lettuce. After two months, Dr. LeBlanc and I unrooted all 331 lettuce plants and rated the severity of the *Verticillium* wilt on a scale of 0-5, with 0 being none at all and 5 being completely infected by the *Verticillium*. When all the data was gathered, it was placed onto an Excel sheet in order to calculate the average rating and standard deviation for each treatment. The results of this experiment seemed to be inconclusive as the inoculated roots had similar numbers to the negative control when looking at the individual average of each isolate. Due to this, there seems to be no evidence to show that any of these isolates were able to treat the *Verticillium* present in the lettuce roots.

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