



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Sushruth V. Subbarao	Project Number S1612
Project Title Effects of Metabolites Produced by Cladosporium species on Bean and Lettuce Plants	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The effects of metabolites produced by the fungus, <i>Cladosporium</i> sp. on crops in the Salinas Valley such as beans and lettuce were determined. This fungus has shown a remarkable suppressive effect on one of the most serious pathogens (<i>Sclerotinia</i> spp.) affecting a wide variety of crops grown in the Salinas Valley. It was hypothesized that the target of <i>Cladosporium</i> sp. is specific to <i>Sclerotinia</i> spp. and it may not be toxic or cause disease on crop plants such as beans and lettuce. Only the latter part of this hypothesis was explored experimentally.</p> <p>Methods/Materials Bean and lettuce seeds were planted in 16 oz styrofoam cups containing autoclaved sand and watered as needed. <i>Cladosporium</i> was grown in Petri plates containing potato dextrose agar, the culture filtrate was extracted from 20-day-old cultures, and was partially purified by repeated filtration and heating to 80°C to neutralize the fungus and to concentrate the filtrate. Two dilutions of this filtrate (1:4 and 1:8) and an uninoculated control (0) were the treatments tested in this experiment. When the bean and lettuce seedlings produced two true leaves, 9 bean plants in five styrofoam cups and 15 lettuce plants in five styrofoam cups per replication each were sprayed with each concentration of the culture filtrate and sterile water. For each treatment, there were 4 replications. Plant heights for the bean plants were measured before spraying and at weekly intervals after spraying for 3 weeks. Since lettuce in early stages has a prostrate growth, height was not measured. The number of lesions was also measured before and after spraying the culture filtrate or water. At the termination of the experiment, the plants were washed free of soil, dried at 60°C for 48 hours and weights were taken. The data were analyzed to determine the treatment differences.</p> <p>Results <i>Cladosporium</i> sp. did not affect either the growth of bean or lettuce plants nor cause any disease on these crops.</p> <p>Conclusions/Discussion After further testing, the suppressive effects of <i>Cladosporium</i> sp. on <i>Sclerotinia</i> spp. can be exploited for disease control in commercial agriculture. Scientists at the University of California, Davis, are currently characterizing this interaction between <i>Cladosporium</i> sp. and <i>Sclerotinia</i> spp. further.</p>	
Summary Statement My project studied the effects of metabolites produced by a currently unidentified species of the fungus, <i>Cladosporium</i> on common crops in the Salinas Valley such as beans and lettuce.	
Help Received Dr. Wu from UC Davis suggested the project and provided the preliminary literature on the topic. Dr. Durkee corrected all of my write-ups.	