



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.) Phu N Nguyen	Science Fair Use Only S1320
Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) The Effects of Common Bacteria on the Decomposition of Pesticides.	Division _ Junior (6-8) <u>X</u> Senior (9-12)
Preferred Category (See page 5 for descriptions.) 8 - Environmental Engineering	
Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p>HYPOTHESIS: If Bacillus subtilus, Escherichia coli, and Micrococcus luteus are mixed to diazinon, carbaryl, and acephate, then the growth of onion roots will be the same as those that are grown in distilled water.</p> <p>PROCEDURE: Pesticides were tested at different concentration for the individual pesticides were: acephate, 2ppt, 0.2ppt, and 0.02ppt; carbaryl, 2.6ppt, 5.25ppt, and 10.5ppt; and diazinon, 1.3ppt, 2.6ppt, 5.25ppt, and 7.87ppt. Ten test tubes were filled with each solution. An additional ten test tubes were filled with distilled water to serve as a control.</p> <p>Two millimeters were shaved from the base of each onion. One onion was placed in each test tube. The inions were grown in the dark for five days. On the fifth day, all roots were removed and measured.</p> <p>B. subtilus was mixed into a new batch of same concentration solution of pesticide. Then the same thing was done to E. coli, and M. luteus to another batch of pesticide solution. The solutions with pesticide and bacteria were then poured test tubes. Onions were placed on top of the test tubes for a five-day growing period in the dark until taken out to be cut and measured.</p> <p>RESULTS: Roots that were grown in 0.2ppt and 0.02ppt acephate were longer than the control. Although those two concentrations caused increased length of the onion root, 2ppt acephate did not. It inhibited the length of the onion to the point of almost no growth. Roots grown in diazinon were shorter than the control in all concentrations. Carbaryl suppressed the growth of the onion roots the most. Results from this year experiment supported a three-year experiment with a slightly different in root length. An attempt to grow onion in pesticide solution mixed with bacteria shows that certain bacteria helps enhanced the growth of onions wills other suppressed them.</p> <p>CONCLUSION: The results support the hypothesis to a certain point. It was predicted that acephate, carbaryl, and diazinon solution would diminish the length of roots. However, acephate at low concentration actually enhanced the root length. The others behaved as predicted. In addition, onion grown with bacteria mixed with pesticides shows a greater growth then those without bacteria.</p>	
Summary Statement (In one sentence, state what your project is about.) To decompose pesticide residue using bacteria through culturing them.	
Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. HaiSan and TT helped cut the onion root; Under the supervision of Mrs. Estes	