



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Robert E.S. Weller	Project Number J1928
Project Title Are Annual and Perennial Plants Differentially Eaten by Snails?	
Abstract Objectives/Goals My objective was to test whether snails prefer to eat annual plants more than perennial plants. I predicted that annual plants would be eaten more because annual plants may have fewer chemical and physical defenses than perennial plants. Methods/Materials I used <i>Helix aspera</i> , the common brown garden snail, and 6 species each of annual plants and perennial plants. I cut 2 x 2 cm squares of leaves and put one square of each species and one snail in each of 10 plastic containers. After 12 hours, I measured the remaining leaf area. Results The annual plants were eaten much more than the perennials (47.8% of leaf area eaten for annuals, 15.6% for perennials). The lettuce (annual) and <i>Petunia</i> (annual) were eaten the most by the snails and the <i>Viola</i> (annual), <i>Primula</i> (perennial), and the <i>Gerbera</i> (perennial) were eaten the least. Conclusions/Discussion I predicted that the snails would eat the annual plants more than the perennial plants because the annual plants may have fewer physical and chemical defenses. Annual plants may have fewer defenses because they have shorter lifespans and live in different places each year and it is therefore difficult for herbivores to locate them. Perennial plants live for years in the same place before they die, and the herbivores get used to the plants being there. Perennial plants may have more chemical and physical defenses to keep from being eaten. Examples of physical defenses include thorns and tough leaves. Chemical defenses include tannins that make leaves taste bad, and cyanogenic glycosides that release cyanide when leaves are chewed. My results are consistent with the idea that perennials have more defenses than annuals to discourage herbivores from eating them.	
Summary Statement My project tested whether annual and perennial plants are differentially eaten by snails.	
Help Received Dad helped collect snails and buy plants. Mom helped with statistics and graphs, and measuring leaf area. Dick Hudson helped with statistics. Ms. Beth Zemke helped with paper organization.	