



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> Casey M. Campos	<b>Project Number</b> <b>J2004</b>
<b>Project Title</b> <b>The Effects of Natural Pre-Emergents on Seed Germination</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my project was to determine the effects of natural pre-emergence on seed germination. <b>Methods/Materials</b> Cayenne pepper extract, lemon juice, vinegar, and water (as a control) were individually sprayed onto separate gardening trays each containing 72 radish seeds planted in topsoil. The natural pre-emergence were chosen based on their chemical compound, and each individual gardening tray was sprayed with the same amount of respective product. Greenhouse lids covered the trays. They were placed under sun lights and observed daily for six days with notations made on any changes. <b>Results</b> The radish seeds that were sprayed with cayenne pepper extract took the longest amount of time to sprout and had the fewest amount of germinating seeds. Lemon juice also took the same amount of time for seeds to sprout, but had more seeds germinate. Seeds sprayed with vinegar, along with the control group sprayed with water, took the shortest amount of time to sprout and also had the most seeds germinate. <b>Conclusions/Discussion</b> Cayenne pepper extract contains an irritating alkaloid (capsaicin) that is toxic to other organisms. This may have interfered with the coating on seeds, delaying the germination process. My conclusion suggests that people should spray their weeds with a natural pre-emergent product like cayenne pepper extract.	
<b>Summary Statement</b> My project proves that natural pre-emergence can prevent or delay seed germination.	
<b>Help Received</b> Mother helped with display board.	