



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Carmen Whitley	<b>Project Number</b> <b>J1437</b>
<b>Project Title</b> <b>Do You Believe in Magic? Testing the Rationality of Traditional Beliefs</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Most people dismiss traditional Native American beliefs as superstitions and black magic, but was there truly a rational reason for certain beliefs? My project investigates whether certain traditional Indian beliefs were actually rational. I have looked at the tobacco ceremonies used by South American natives, focusing on the Blessing of the Crops with tobacco smoke. These Indians believe that tobacco is a purifying or cleansing agent and that it will protect their crops. My hypothesis is that this traditional belief has a scientific basis.</p> <p><b>Methods/Materials</b> I tested this hypothesis by an experiment that looks at the effect of tobacco on plants exposed to bugs. My hypothesis is that this religious belief helped kill insects and increase crop yield, therefore there was a rational reason to do this. I tested this hypothesis by growing bean plants, infesting them with Pacific Spider Mites, and seeing if tobacco prevented or inhibited the infestation rate.</p> <p><b>Results</b> In my results, the Control Group had a very mild infestation: 1.3% total leaf infestation, 32% partial infestation and 66.7% no infestation. Variable Group A, which did not receive tobacco, had 68% of the leaves in the aquarium totally infested, 27% moderately infested and 4.7% of the leaves not infested at all. Variable Group B, which had tobacco, had 32.8% of the leaves totally infested, 36.1% partially infested and 31.1% not infested at all. .</p> <p><b>Conclusions/Discussion</b> Through this experiment, I showed that my independent variable, tobacco applied to some of the plants, effected the dependent variable, the Pacific Spider Mite infestation rate. I believe that tobacco had this effect due to the toxic effect of its active chemical agent, nicotine. These results show that my hypothesis is correct</p>	
<b>Summary Statement</b> I tested whether traditional Sopath American Indian beliefs had a rational scientific basis.	
<b>Help Received</b> Mr. Ed McFadden, professional farmer, helped obtain insects and design hothouse; Dr. Rick Chacon, El Camino College, provided photos; parents helped with board lay-out. ick Chacon	