



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Stephan H. Spangenberg</b>	<b>Project Number</b> <b>S2414</b>
<b>Project Title</b> <b>How Does Nutrition Affect Honeybee Longevity?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> This project was designed to assist in the national search for the cause of Colony Collapse Disorder, which is destroying domestic honeybee colonies. I sought to identify or eliminate honeybee nutrition as a factor contributing to this disorder, by testing if the pollen bees have access to under normal domestic conditions contains the nutrients necessary to face infection, in comparison to a blend of specially prepared, well balanced pollen. In addition, I tested the effects of a high-fat diet on bees, in an attempt to identify an improved method of nourishing, and therefore protecting, bees.</p> <p><b>Methods/Materials</b> Bees were isolated in six contained groups. Groups were fed either local pollen, ideal pollen or ideal pollen with added canola oil (fat). For each of these three types, there was also a group fed blended bees, exposing them to diseases they face under normal conditions. Diets were evaluated based on the average lifespan of the bees that consumed them. The experiment was run twice.</p> <p><b>Results</b> The groups of bees fed local pollen and blended bees had average life spans of 3.39 and 4.09 days whereas the groups fed ideal pollen and blended bees had average life spans of 4.66 and 5.63 days. The life spans of the high-fat diet groups fed blended bees were 5.43 and 5.30 days.</p> <p><b>Conclusions/Discussion</b> From these results I conclude that local pollen lacks essential nutrients, thereby weakening the bees' immune systems. The results from the groups fed canola oil indicate additional testing would be required before conclusions could be reached.</p>	
<b>Summary Statement</b> This project investigated honeybee nutrition as a possible factor in Colony Collapse Disorder, a phenomenon destroying domestic honeybee colonies.	
<b>Help Received</b> Dr. Eric Mussen answered some of my questions, professional beekeepers helped safely handle bees.	