



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Greta C. Feague</b>	<b>Project Number</b> <b>J2106</b>
<b>Project Title</b> <b>The Effects of Pesticides on Bees' Lifespans</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The experiment was meant to figure out whether there's a meaningful difference in the way different types of pesticide affect a bee's lifespan. I decided on my question because Colony Collapse Disorder is causing bee populations to drop alarmingly. Hypothesis: The bees ingesting neonicotinoids will have a shorter lifespan than the control, but the results will be subtle. The bees ingesting an organic pesticide will fall somewhere in between the two.</p> <p><b>Methods/Materials</b> Keep six separate boxes of bees, feeding them with sugar water and maintaining appropriate temperature. For each pair of boxes, add trace amounts of A) neonicotinoid pesticide, B) organic pesticide, or C) water (control) to the sugar water, in proportions that reflect concentrations that bees would ingest near treated crops. Count dead bees daily to measure the impact of the pesticides.</p> <p><b>Results</b> The bees ingesting neonicotinoids died the fastest. Between the two boxes an average of 8% of the total number of bees died each day while an average of less than 3% of the total number of bees died each day in the other three boxes together. By the end of 16 days 66.5% of the neonic boxes had died, 27% of the organic pesticide box had died, and 9.5% of the control had died.</p> <p><b>Conclusions/Discussion</b> The organic pesticide is clearly much better for the bees than the neonicotinoid. In doing this project I demonstrated that neonicotinoids do not just affect bees' navigation abilities, but directly and significantly affect their mortality. Furthermore I conclude that the organic pesticide negatively affects bees' lifespans far less than the neonic pesticide, but harms their longevity nonetheless.</p>	
<b>Summary Statement</b> I showed that the organic pesticide tested harmed bees' longevities far less than a neonicotinoid, but harms them nonetheless.	
<b>Help Received</b> I received supplies (organic and inorganic) as well as lots of information on the correct handling of bees from beekeeper Arthur Hall. My dad made sure I could get all the supplies I needed, provided that it was not too expensive, as well as making recommendations on my written report.	