



CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s) Kathleen G. Virsik	Project Number J2322
Project Title Enhanced Heptyl Butyrate Attractants for Western Yellowjackets (Vespula pensylvanica)	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Vespula pensylvanica (V. pensylvanica), or western yellowjackets, are the most common species of yellowjackets in California and the western United States. Outdoor summertime activities often result in human-yellowjacket contact, which can lead to painful stings and even allergic reactions. The purpose of my experiment was to find an improved heptyl butyrate (HB) attractant which attracted more yellowjackets than HB alone (HB is the leading yellowjacket attractant).</p> <p>Methods/Materials I did 2 different experiments within my project. In the first, I tested single agents. In the second, I tested combinations of test agents with heptyl butyrate (HB) against HB alone. In each experiment, I tested each test agent twice. For my project, I made three boxes out of cardboard and put the attractants inside. I counted the number of yellowjackets that entered the box.</p> <p>Results I positively identified the yellowjacket species as V. pensylvanica workers. In the first experiment, I found that heptyl butyrate (HB) attracted an average of 171.5 yellowjackets, while the highest number of yellowjackets attracted by the other test agents was turkey broth, with 35.5. In short, I found that HB was by far the strongest yellowjacket attractant as a single agent. In the second experiment, I found that the citric acid/HB combination and the turkey broth/HB combination attracted 59% and 34% more yellowjackets, respectively, than HB alone. On the other hand, the butyric acid/HB combination and the isobutanol/HB combination attracted 80% and 54% fewer yellowjackets, respectively, than HB alone. The other HB combinations attracted similar numbers of yellowjackets as HB alone. No bees were attracted to any of the attractants.</p> <p>Conclusions/Discussion I can conclude that butyric acid and isobutanol may be repellents of V. pensylvanica, while citric acid/heptyl butyrate (HB) and turkey broth/HB combinations may be more effective attractants of V. pensylvanica than HB alone. The addition of citric acid to commercial traps should be considered.</p>	
Summary Statement I discovered that a citric acid & heptyl butyrate combination attracted significantly more western yellowjackets (vespula pensylvanica) than heptyl butyrate alone.	
Help Received On my own, I planned the experiment and made the test boxes. My dad assisted me while I carried out the experiment. Both my parents helped me edit my poster.	