CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36141

Project Title

Honey, Who Shrunk the Bee Population? Investigating Colony Collapse Disorder

Abstract

Objectives/Goals

The objective of this study is to see if I can completely eliminate or control Colony Collapse Disorder (CCD) by killing Tracheal mites (Acarapi Woodi, throat mites) and Varroa mites (Varroa Destructor, parasitic mites) by using natural ingredients, keep my hives strong for pollination, overwintering and not contaminating my honey.

Methods/Materials

Tested different chemicals on treating Varroa mites and Tracheal mites to find the most natural way to treat the mites to solve Colony Collapse Disorder. Used HopGuard (natural beer hops to treat the Varroa mites and menthol to treat the Tracheal mites in a natural way on my 96 of 144 hives of bees. The other 48 hives were the control group to compare the treatments.

Results

The testing of the Varroa and Tracheal mites was compared to the control group after the chemicals were applied. There was a slight drop of mites in the hives and the chemicals were detected in the honey. There was a huge drop in bee strength and there was more Colony Collapse. When using natural HopGuard the first application was 92% efficient, the second application was 97% efficient. Pre-treatment for every 100 bees there were 10 mites. Post-treatment for every 100 bees there was 1 mite, with no residue in the honey.

Conclusions/Discussion

The menthol and HopGuard treatments killed only the mites, not the bees. It was 97% efficient in killing the mites and Colony Collapse was minimal or eliminated 100%. I found HopGuard used beta plant acids from hop plants and does not harm bees or brood, and leaves no residue in the honey. My hives were stronger when overwintering. When using chemicals to treat my bees I found it had neonicotinoides which are found in chemicals the farmers are spraying on their orchards, this is taken back into the hives and causes Colony Collapse.

Summary Statement

My project showed how using natural ingredients to eliminate Varroa and Tracheal mites eliminated Colony Collapse Disorder.

Help Received

My mom worked with me as she is a beekeeper, and I had the Bee Diagnostic Team help with my testing.

Preliminary