CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)

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Project Number

33370

Project Title

Effect of Light and Heat on the Silk Production of Silkworms

Abstract

Objectives/Goals

My project was to see if the bodily process of producing silk from silkworms can be affected by the heat and light in a specific habitat and temperature.

Methods/Materials

Four terrariums were places in two separate rooms, for the two trials ran in this experiment. The experiment groups both had heat, regardless of which trial and the control groups had no heat lamp, also regardless of its trial. The first experiment group had both light and heat, and the first control group just had light. In all cages, six silkworms were placed in each, to ensure a consistent sample size. In the second trial, the experiment group just had heat, but no light, and the control group was entirely bare, no light or heat. The silkworms would be fed twice a day and each cage was monitored for 15-20 minutes each.

Results

Silkworms produce more silk under cooler and darker habitats. In the first trial the control group, with only light, produced 226 grams of silk, in comparison to the experiment group's 151 grams of silk. This is a 75 gram difference between the experiment and control groups, which is quite substantial. In trial two, the control group, with no light or heat produced 251 grams of silk, compared to the 136 produced by the experiment group. These two numbers show a 115 gram difference, exceeding the first trial's numbers. This shows that silkworms prefer a cooler and darker habitat to produce silk in larger quantities.

Conclusions/Discussion

Through both of the trials, one thing is clear: silkworms produce more silk in cooler, darker, and less hot and humid habitats. The silkworms in the control cage were often more active, as well as mobile than the experiment group. I believe this is because the heat had a great effect on how the silkworms acted, moved, and ultimately, how much silk they produced in the end. Silkworms obviously prefer cooler habitats not only to produce more silk, but also faster. All of the control group's worms spun into their cocoons at a normal and somewhat fast paced time. However, the experiment group's worms always seemed to be slower in everything they did, and the amount of silk was substantially less.

Summary Statement

I am testing whether light and heat have a substantial effect on how much silk is produced by a silkworm.

Help Received

Father's colleague provided terrariums, my teacher Mrs. Gillum and her advice towards my project, and my parents for taking me to get supplies I needed.