



TITLE:

**UNVEILING THE HONEYBEE
(*APIS MELLIFERA*) FLIGHT
ABILITY AND BEHAVIOR IN
MITE-RESISTANT BEE STOCKS**

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ABSTRACT

- Bees' flight efficiency impacts foraging and colony productivity.
- Central State University developed high grooming bees resistant to Varroa mites.
- Research gap: Influence of grooming behavior on flight dynamics.
- Hypothesis: High grooming, mite-biting bees have better flight performance than low grooming bees.
- Methodology: Measure flight distance, velocity, and time in 6 foragers from high and low grooming colonies.
- Expected outcome: Link between grooming behavior and enhanced flight abilities.





INTRODUCTION

- **Bees are vital.**
- **Efficient flight is crucial.**
- **Varroa destructor mites severely harm bees.**
- **High mite biting behavior is desired.**

BACKGROUND RESEARCH

- Central State University breeds bees with high mite biting behavior.
- These bees remove and damage mites.
- High grooming bees are more resistant to Varroa destructor.

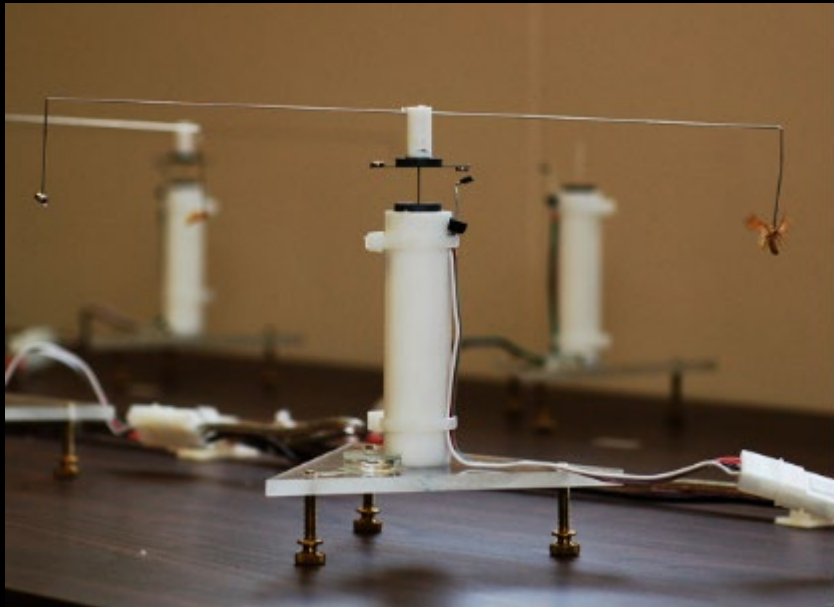


RESEARCH QUESTION & HYPOTHESIS



- Research Question:
- Is there a difference in flight abilities between high grooming and low grooming bees?
- Hypothesis:
- High grooming and mite-biting bees will show better flight performance than low grooming bees.

METHODOLOGY



- Test 6 foragers from high and low grooming colonies.
- Measure flight distance, velocity, and duration.
- Use a controlled environment for consistency.

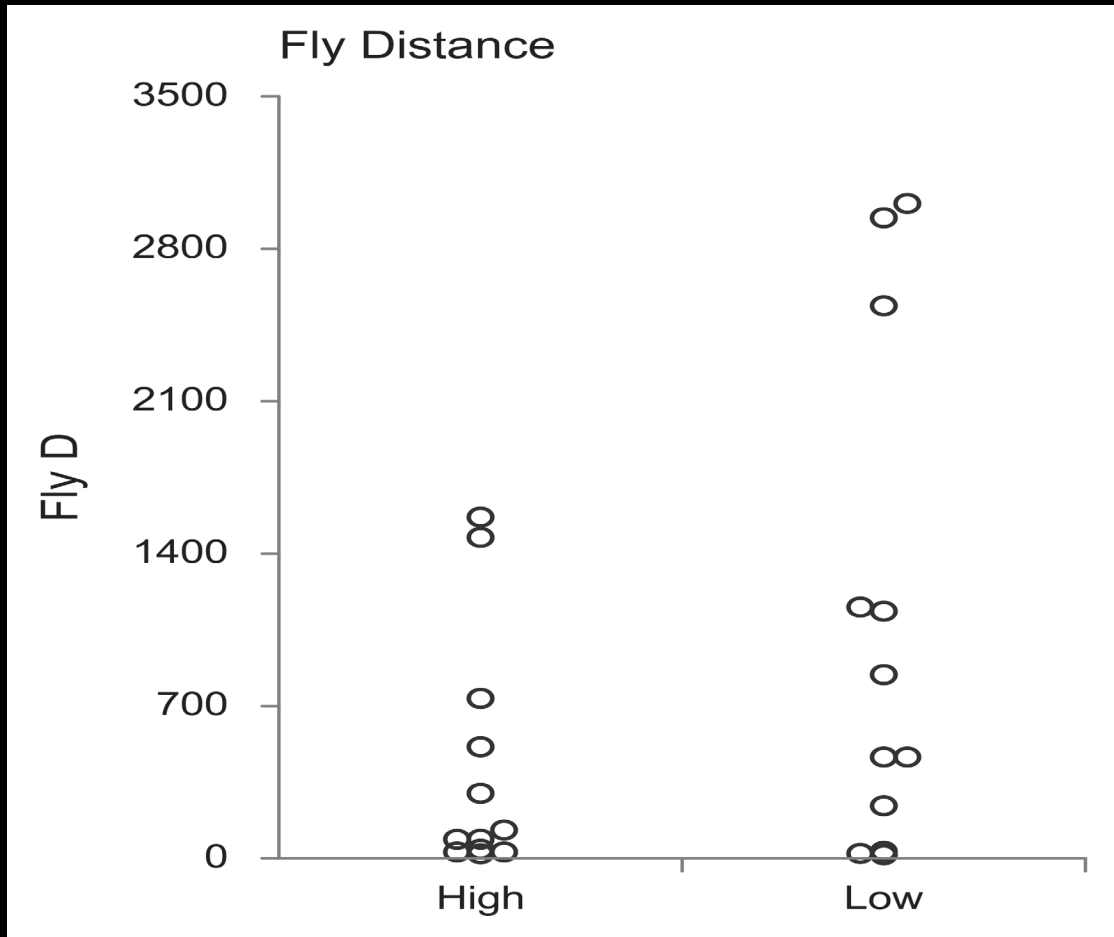
METHODS



- Attachment of Hanging Rings:
- Attach rings with biological glue.
- Flight Mill Setup:
- Connect bees to flight mill.
- Calibrate and record data.
- Measurement of Flight Parameters:
- Record flight speed, time, and distance in a controlled environment.

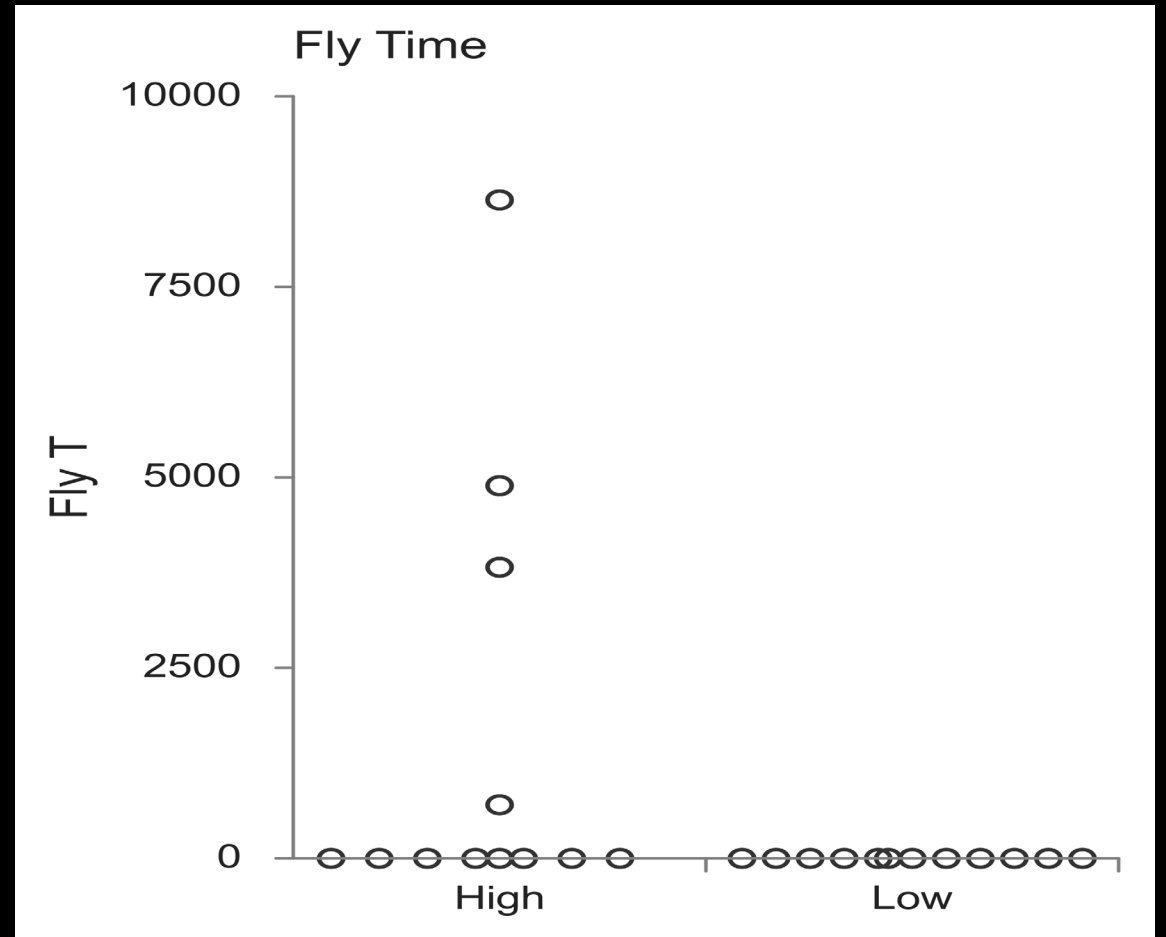
- Collection of Bees:
- Trap foragers outside the hive.
- Collect bees with pollen using tweezers.
- Freezing and Anesthetizing Bees:
- Freeze bees in centrifuge tubes with crushed ice for 1.5 minutes.
- Preparation of Bees:
- Clean dorsal thorax hair with brushes.
- Remove fluff on the pronotum.

DATA ANALYSIS 1/2



F STATISTIC
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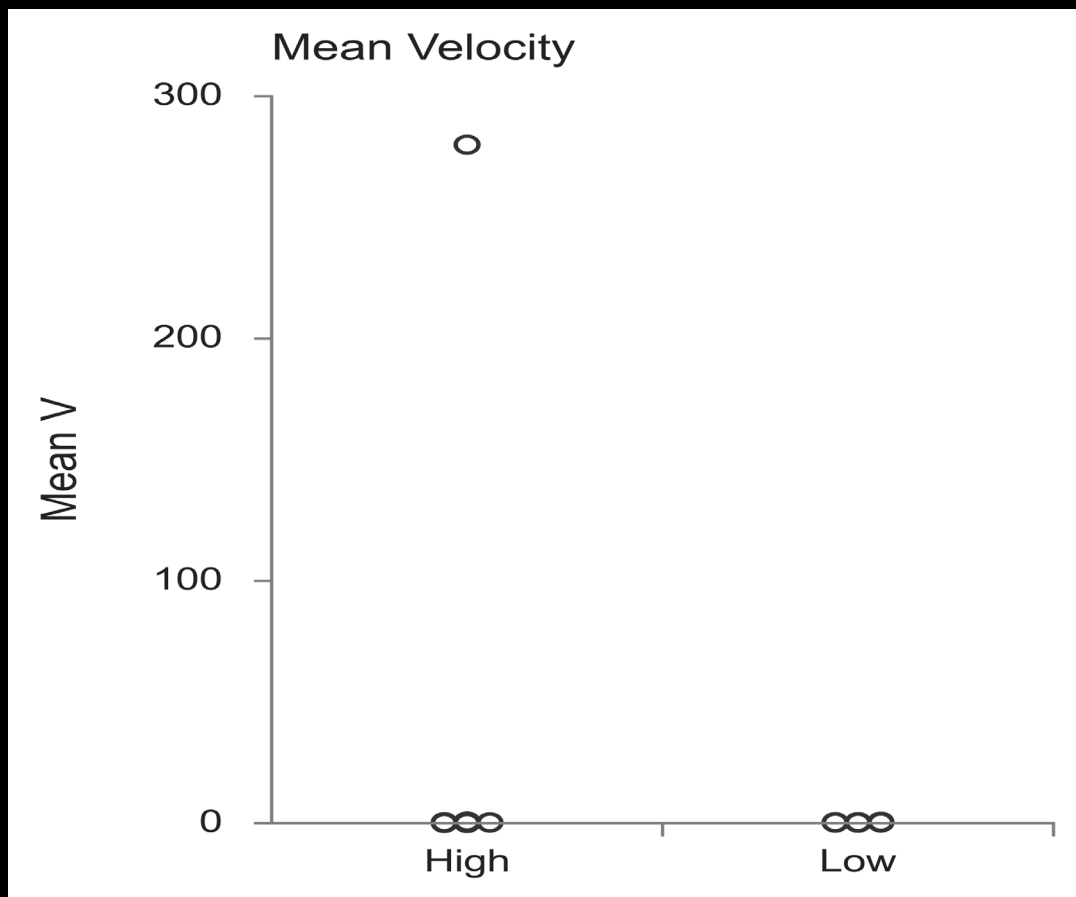
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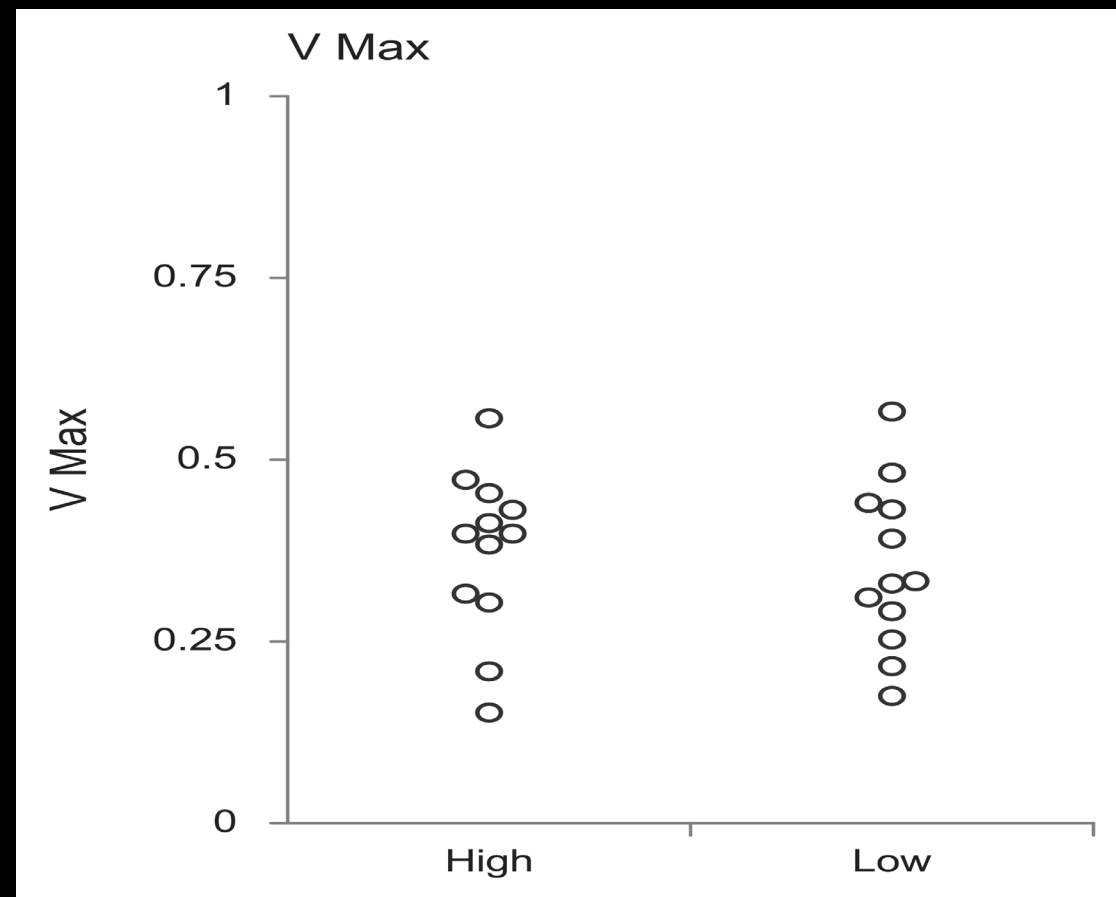
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DATA ANALYSIS 2/2



F STATISTIC
=0.9965

P- VALUE
=0.3290



F STATISTIC
=0.2286

P- VALUE
=0.6373

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THANK YOU

The background of the slide is a close-up photograph of a bright yellow flower, possibly a daisy or similar, with several bees (honeybees) on it. One bee is in the upper right, another is on the left, and several others are clustered on the flower's head. The background is a soft, out-of-focus green.

- I would like to express my heartfelt gratitude to Dr. Li-Byarlay for her exceptional mentorship and to Ms. Kroh for their unwavering support throughout this journey. The knowledge and skills I gained during this internship have greatly enhanced my understanding of bee ecology and scientific research.
- I am also thankful to the USDA for funding this opportunity. This transformative experience has boosted my confidence and clarified my future direction. I am inspired by your dedication and passion, and I hope to carry these lessons into my academic and professional pursuits.
- Thank you once again for this remarkable opportunity.