

Improving Survival Success Rates with Honeybee Colonies through Supportive Cohorts

Meeting #4 THE SWARMING EVENT

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Sustainable Agriculture Research & Education

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The NIFA fund research and education projects to support sustainable agriculture; funding projects that help farmers, ranchers, and educators develop new ideas and strategies.

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AGENDA Meeting #4 5-14-25 THE SWARMING EVENT

- Types of Queen Cells
- Conditions for a Swarm
- Cause and Effect
- Preparation Signs
- Swarm Prevention
- Resources
- Q & A




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TYPES OF QUEEN CELLS

QUEEN CUP 

QUEEN CELL – EMERGENCY 

QUEEN CELL – SUPERSEDING 

QUEEN CELL – SWARM 

4

Which photo represents COLONY reproduction?

A 

B 

A honey bee colony is a super organism and eusocial meaning that they depend on one another for survival. The colony reproduces as a unit.

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WHAT ARE WE DOING TO SATISFY OUR BEES, SINCE SWARMING IS ULTIMATELY WHAT THEY WANT?



6

Conditions Needed for a Swarm

- Plenty of resources
- Lack of space
- Established drones
- Swarm cells



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Cause and Effect – Plenty of Resources

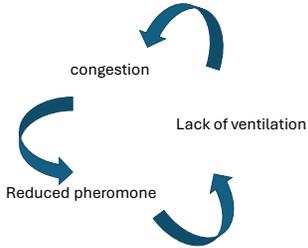
- Nurse bee – congestion
- Lack of air flow – poor ventilation
- Reduced Queen Pheromone



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Cause and Effect – Lack of Space

- Leads to congestion
- Leads to poor ventilation
- Reduced Queen Pheromone



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Swarm Preparation Signs

- Strong colony
- Congestion
- Swarm cells
- Queen weight reduction
- Restless queen
- Laying reduction or halt



10

What is the appearance of the queencell telling you?



11

The sound is unmistakable

12

Ineffective Prevention Methods

- Clip queen wings
- Placement of queen excluder

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Swarm Prevention Actions

- Lower colony population
- Provide more space
- Increase bees' perception of queen pheromone
- Adjust bees' perception of crowdedness
- Cut out all queen cells
- Make artificial swarm

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Making Nucs

NUC

- 2 frames of brood
- 2 frames of nectar/pollen
- 1 frame drawn comb
- Mother queen
- 3 frames of additional nurse bees
- Feed

ORIGINAL NEST SITE

- 3 Queen cells

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Bees Know Best

MY BEES HAVE SWARMED NOW WHAT?



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BIOLOGY EXPLAINS THE “WHY”

GENERAL TERMINOLOGY:

- PROTEIN** – the building blocks for life with the instructions written within the DNA.
- HORMONES** – are chemicals secreted by special glands, remaining inside the body, for the general function and balance of the body.
- PHEROMONES** – are like hormones, but these chemicals are secreted outside of the body and are used to elicit the behaviors of others within the same species.
Honey bee worker bees transmit many pheromones throughout the colony through trophallaxis (mouth-to-mouth sharing of food); the queen pheromone and brood pheromone are two of these pheromones transmitted throughout the colony for communication purposes.
- NEUROTRANSMITTERS** – are chemicals released by neurons in the brain to send very fast signals to other neurons and are involved in many functions (muscle movements, learning, memory, etc.)

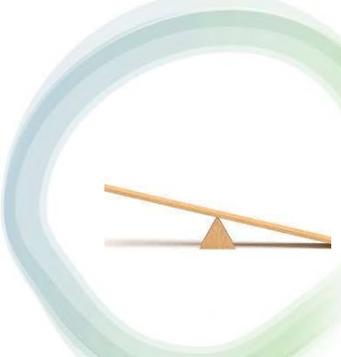
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PHEROMONES – HORMONES – NEUROTRANSMITTERS

JUVENILE HORMONE – (hormone) Assists in the shift from tasks inside to outside the hive. This is highest in older bees (opposite of insects where it is higher when younger).

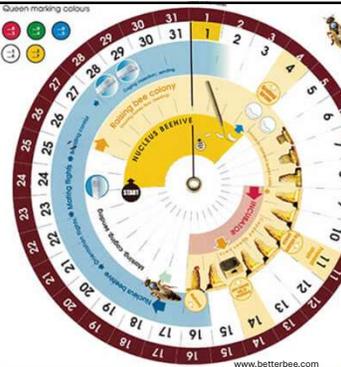
VITELLOGENIN – (protein) Facilitates egg production in the ovaries. In the hypopharyngeal gland of nurse bees it helps create royal jelly – nurse bees have high levels of vitellogenin.
 • Enhances the immune system and increases lifespan.

DOPAMINE – (neurotransmitter) Low levels of dopamine stimulate nurses to care for brood. The presence of the queen (her pheromones) regulates dopamine production in worker bees' brains. Nurse bees come in contact with the queen and stimulates this nursing behavior.



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QUEEN TIMETABLE



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<p>NEXT MEETING 5/31/25 IN-PERSON 11:00am-1:00pm</p> <p>LOCATION: Keys to Bees 620 Gutshall Road Boiling Springs, PA</p> <p>Upon entering driveway, proceed up the stone driveway past the garage. Park at the top of the hill and make your way to the pole barn.</p> 	<p>SOUTH CENTRAL PA LOCAL CLUBS</p> <p>YCBA – meets 4th Tuesday 7:00pm-9:00pm at Aldersgate Church, 397 Tyler Run Rd., York</p> <p>CABA – meets 3rd Friday 7:00pm-9:00pm at HACC, 1 HACC Dr., Harrisburg</p> <p>LCBS – meets 3rd Tuesday 6:30pm-8:30pm at Millersville University, Roddy Hall Room 261</p> <p>PCBC – meets 3rd Sunday 2:00pm at Penn State Ext. Office, 8 S. Carlisle St., New Bloomfield</p> <p>FCBA – meets 3rd Thursday 6:00pm-8:30pm at locations vary check on website fcbapa.com</p> <p>PSBA – watch for summer picnic</p>
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