Generative

BEE SCHOOL

QUEEN REARING SERIES

SYLLABUS

SYLLABUS

OVERVIEW

Who is this for?

This course is designed for:

- **Beekeepers who have beekeeping experience, have successfully overwintered at least two hives, and have a basic understanding of honeybee biology and hive management.**
- **Beekeepers who are interested in learning about both traditional and alternative approaches to honeybee queen-rearing techniques.**
- **Beekeepers who attend this course should be comfort working with honeybees outdoors in the apiary in a variety of weather conditions.**
- **This course is for a diverse cohort of beekeepers from all walks of life. We strongly encourage women, LGBTQIA+, Black, Indigenous and low income beekeepers to apply.**

What will I learn?

This course explores strategies for queen rearing in a sustainable apiary using the mating biology of the honeybee. Students will integrate brood breaks and queen rearing practices and collect data about how these practices impact hive health.

Each participant will work in pairs to manage a set of 2 hives. Each pair will learn and then practice Walk Away Splits, 48 Hour Queen Cell Grafting, 10 Day Queen Cell Grafting and Cell Raiser and Mating Nuc Construction.

The skills we learn will build upon one another as the season progresses.

As such, students are asked to commit to attending all 4 sessions with one cohort of learners.

How Will I Learn?

This course is taught using generative learning. **Generative** learning is a theory that involves the active integration of new ideas with the learner's existing schemata. **Generative** learning is, therefore, the **process** of constructing meaning through generating relationships and associations between stimuli and existing knowledge, beliefs, and experiences.

Classes include in-person instruction, group and peer discussions, and hands-on field experience at on-site hives.

There will also be ample time to socialize, chat, snack and hang at fires together. Because we're building a bee community too.

GLOSSARY

Grafting: The action of transferring a larva from a brood cell into a manufactured cell cup.

Video 1 | Video 2

Cell Raiser: A special colony used in queen rearing to initiate, provision, and care for queen cells.

See a video here.

Mating Nuc: A nucleus colony that is specifically used for mating queen bees.

See a video here.

48 Hour Cell: A queen cell removed from a cell raiser 48 hours after grafting.

See a video here.

10 Day Cell: A queen cell removed from a cell raiser 10 days after grafting.

See a video here.

OVERVIEW

When is it?

There are 2 cohorts.
In each cohort students commit to attending 4 sessions. Here are the dates:

Weekend 1:	Weekend 2:	Weekend 3:	Weekend 4:
All cohorts together: May 27th-29th	Cohort 1: June 17-19th OR Cohort 2: June 24th-26th	Cohort 1: July 8th-10th OR Cohort 2: July 15th-17th	All cohorts together: August 5th-7th

Where:

They Keep Bees
258 Greenfield Rd,
Montague, MA 01351

Tuition/Costs:

This program is grant funded by the generosity of a NESARE Research and Education Grant.

Students will select a sliding scale enrollment fee based on individual financial capacity ranging from $0-800. All enrollment fee contributions will go directly back into enhancing the program.

GLOSSARY

Comfort Hive: A modified Warre-style box hive that is easy to construct and cost very little to make.

See a video here.

Walk Away Split: Splitting a colony and leaving it to raise its own queen.

See a video here.

Queen Catch: Capturing and caging a queen bee in order to isolate or remove her from the hive.

See a video here.

Queen Bank: The practice of storing or banking mated queen bees in queen cages within a colony.

See a video here.

OVERVIEW

Instructors:

Ang Roell, They Keep Bees, info@theykeepbees.com
Sam Comfort, Anarchy Apiaries, anarchyapiaries@hotmail.com
Bi Kline, They Keep Bees, info@theykeepbees.com

Guest Speakers:

Michelle Mejia, Moral Bees, North Carolina
Melanie Kirby, Zia Queen Bees, New Mexico
Tucka Saville, Tucka Bee, New York & Florida
Sarah Blackburn, Anarchy Apiaries, Florida
Hannah Whitehead, University of Massachusetts, Amherst, Massachusetts

Recommended Reading:

- How-To Guide to Sustainable Queen Rearing by They Keep Bees and Anarchy Apiaries
- Walk Away Split Recipe & Fact Sheet by They Keep Bees and Anarchy Apiaries
- *Honey Bee Biology* by Dewey Caron with Larry Connor
- *Honey Bee Democracy* by Tom Seeley
- *Mating Biology of Honeybees* by Gudrun Koeniger, Nikolaus Koeniger, Jamie Ellis, and Lawrence Connor
- Articles and videos in Shared Library: View Here

Bees and Hives:

All hives and all accompanying equipment, smokers and hive tools will be provided for participants and managed collectively on site at They Keep Bees for 1 season.

Students must bring their own protective equipment. **Please notify They Keep Bees if you do not have equipment. We have a limited supply of PPE we can lend out.**

Everyone in class will co-manage hives with a collaborator, and participants will work collaboratively to achieve skill building.

Participants will have the option to take home queens they've raised in the "Hands On" field work portion of the course.

ALL woodenware (hives and frames) will be constructed and remain on site.

Prior to the first class meeting:

- Review Syllabus, Read Appendix A and B,
- Bring materials as outlined in Appendix A
- Sign Bee School Waiver (and bring to class)
- Participants are welcome to review the articles and videos in the *Recommended Reading* section (above). This is not required, but encouraged.

HANDS-ON CLASS SCHEDULE

Dates	All Cohorts Together: May 27-29 2022	Cohort 1: June 17-19 *OR* Cohort 2: June 24-26 2022	Cohort 1: July 8-10 *OR* Cohort 2: July 15-17 2022	All Cohorts Together: August 5-7 2022
Day 1: (Fri)	Introductions & Team Building Equipment Building Comfort Hive Demonstrations	Team Building Guest Speaker Hive Demos- Queen Catch, Mark Set Up Queen Bank	Team Building Guest Speaker Grafting Demo	Team Building Break Summarize Evaluations Completed
Day 2: (Sat)	Assign Teams Inspect and Evaluate Hives Walk Away Splits Break Hive Expansion Demo Q&A Break Camp Fire	Check and Catch Walk Away Split Queens Split Hives into "Mating Nucs" for Pre-Grafted Cells Break Guest Speaker Camp Fire	Set Up Cell Raisers Break for Lunch Students Graft- 4 Students per Cell Raiser, 10 each Catch 10 Day Cell Queens Camp Fire	Combine Hives Mite Counts Break Prep for Winter Last Camp Fire- Closing and Gratitude
Day 3: (Sun)	Box Building Pack Up Closing Departure	Ripe 10 Day Queen Cells Placed in Hives Closing Departure	Catch 10 Day Cell Queens Check Graft Closing Departure *2 day cells will need to be placed by TKB on Monday	Closing Departure

Assessments:

For all hands-on workshops, students will, with instructor guidance, use peer teams and paper or web-based checklists to assess the success of their methods. Instructors will both demonstrate and assist in the completion of the provided checklists throughout the course.

Expectations:

1. Follow Group Agreements as outlined in Appendix B:
   a. Support all efforts to create a culture of inclusion and cooperation
2. Honor and respect the land that we are learning on.
3. Agree to work cooperatively to complete learning assessments required for our grant funding.
4. Follow all COVID safety protocols as outlined by the program team at each meeting. Safety protocols will be adaptive to variants, emergent science and state guidelines.
   a. We will respond to adaptive changes in PPE and practice accordingly to keep everyone safe.

EVALUATION & APPLIED LEARNING ASSESSMENT

Attending beekeepers will complete a pre-assessment of their skills prior to taking any courses in the program. This verification will help instructors and the advisory committee design a responsive course and establish a baseline of knowledge (Cohort 1: December 2021, Cohort 2: December 2022).

The Preliminary course content will include post-assessments to check for understanding for each workshop (Systems and Functions of Generative Beekeeping, Biology of Queen Production, and Systems for Production). These post-assessments will be completed at the end of the Preliminary course (Cohort 1: March 2022, Cohort 2: March 2023).

Hands-On Skill Building

- For all hands-on workshops, students will, with instructor guidance, use peer teams and a paper or web-based checklist to assess the success of their methods. Instructors will both demonstrate and assist in the completion of the provided checklists (Cohort 1: July 2022, Cohort 2: July 2023).
- Cellraiser workshop, instructors will observe and record data to assess the percentage of queen cells accepted by the colony. Instructors will demonstrate the recording of the "queen take" (Cohort 1: June 2022, Cohort 2: June 2023).
- 48-hour and 10-day Grafting workshops, both instructors and participants will observe cell acceptance through observational evaluation. Instructors will be available to assist in the determination of acceptance. No documentation beyond observation is needed for these workshops (Cohort 1: July 2022, Cohort 2: July 2023).
- Queen Mating Analysis workshop will utilize an assessment tool we developed in a prior SARE grant trial to track cell acceptance. Instructors will be available to assist in the completion of the assessment tool as needed (Cohort 1: August 2022, Cohort 2: August 2023).
- Mite Analysis workshop will require participants to complete a hive evaluation assessment, which will include mite counts. Instructors will provide a paper-based check-list for students to complete their assessment (Cohort 1: September 2022, Cohort 2: September 2023).

Post Application Skills

- Scalable Systems for Honeybee Hive Expansion, participants will be asked to complete a post-assessment of course content and delivery, which instructors will provide as a Google* Form questionnaire (Cohort 1: December 2022, Cohort 2: December 2023).
- Summative Analysis, will inquire about acquired skills and procure feedback from participants to understand how taught skills were applied within their own practices. Students will provide feedback through a Google* Form survey disseminated by instructors (Cohort 1: September 2023, Cohort 2: September 2024).

Throughout the duration of the program, instructors will provide individualized support as needed upon participant request. We anticipate the development of peer-to-peer learning partnerships will also scaffold and encourage support among participants.

APPENDIX A: Requirements and Materials

Students will participate in hands-on training in an on-site apiary (bee yard). Because this is a shared yard, all equipment and protective clothing **must be clean, and uncontaminated**. All participants must properly maintain hives at the course site and conduct themselves in a n inclusive and cooperative manner following all Group Agreements outlined in Appendix B.

Students need to have their own protective equipment. Students will provide their own:

- bee suit or jacket
- veil
- long pants and socks
- boots or closed-toe shoes

Additional "gear" provided by the program includes the following:

- Hive bodies and accompanying materials
- Neoprene gloves
- Hive tool
- Smoker and fuel
- Queen cages
- Grafting supplies

APPENDIX B: Group Agreements

Group Agreements

- **IDENTITY:** Respect everyone's identity and background, including pronouns and names.
- **SHARING EXPERIENCE:** Be aware of your biases, prejudices, and privileges. Allow space for all voices.
    - Use "I statements."
    - Use 'ouch' and 'oops' to address microaggressions in real-time.
    - Ask for support from the program team if you need help mitigating conflict.
- **CONSENT:** Respect everyone's physical and emotional boundaries. Respect confidentiality.
    - Ask before getting close or touching people.
    - What is learned here leaves here, but what is shared here stays here.
- **LISTENING:**
    - The best way to understand is by asking aloud.
    - Silence is okay. Do not assume silence is agreement.
- **SELF-CARE:** Take care of yourself, and advocate for your needs in the group environment.
    - Respect diverse opinions, ideas and ways of thinking/being.
- **SHARING SPACE:** Take care with the land we're working & learning on.
    - This is a shared space and people live, work and visit here, please follow the guidelines outlined by our hosts about how to use the space.
    - Please avoid using substances during the program learning hours, we want you to be present and so do the bees.
        - Please be responsible in the use of substances beyond program learning hours.

- **Something to add? We'll discuss these at our first meeting.**
    - We welcome additions to this document as we build a supportive learning environment together.
        - What do you need to feel present in this space?
        - How can your cohort peers and instructors support you as a learner?

APPENDIX C: Bee School Waiver

Notice: This is an agreement regarding legal rights.

Please read it carefully for understanding before you sign it.

I, _____, freely choose to participate in hands-on beekeeping.

Classes ('Program') taught by teachers and or volunteers ('instructors/mentors') sponsored by They Keep Bees, LLC. I agree to and sign this waiver and Assumption of Risks Agreement (Waiver) in consideration for being allowed to participate in the Program.

Risks Involved: I understand that there are certain risks involved, as described below, with participating in the classes or projects of They Keep Bees, LLC. I understand that I am advised to consult with a healthcare provider of my own choosing before participating in any beekeeping activity.

Bee stings: The bees we work with can and do sting. Everyone will likely receive one or more bee stings. European honey bees are generally not aggressive toward people, but are defensive of their hive (family and food stores). Their calmness or irritability may be induced by weather conditions, odors, colors, hive conditions and manipulation during class.

Reactions to a bee sting may range from:

- **Localized** reactions include one or more of the following: the skin swells and becomes red, hot and painful and itching may occur. These reactions may disappear over a few hours or days, but can persist for a week or longer.
- **Systemic** reactions are far more serious than localized reactions. A systemic allergic reaction can be evidenced by the emergence of itchy bumps (hives), redness and/or swelling of the skin at points distant from the sight of the sting. A systemic allergic reaction may include nausea, vomiting, diarrhea and dizziness.
- With **Anaphylactic** reactions, the person may experience one or more of the following: wheezing, hoarseness, swelling of the tongue, fainting, or difficulty breathing followed by a drop in blood pressure that can lead to shock and death. These types of reactions usually occur within minutes of the sting but can be delayed for up to 24 hours or more. If this type of reaction occurs, we will call an ambulance.

Strains and sprains from lifting and moving hive components:
Proper body mechanics and lifting techniques are important to help prevent strains and sprains to the back, knees, ankles, shoulders, arms and hands. Even handling lighter items, such as hive covers, can result in a sprain. Dropping or lowering heavy hive components too quickly can result in bruising, crushing and broken bones.

Burns: Use of a smoker involves starting and refreshing a fire in the smoker cylinder. Burns can result directly from contact with the fire, or with the metal surface of the smoker as it becomes very hot.

APPENDIX C: Bee School Waiver (cont'd)

Cuts /contusions/abrasions/pinching: Metal hive tools are used to pry open hive boxes, and frames from hive boxes. Hive tools are sharp; they can slip and cause cuts, contusions and abrasions or may result in pinching.

Falling and tripping at the hive site: The apiary site may be uneven and irregular. Twisted and sprained ankles may occur as well as other injuries from tripping and/or falling in and around the apiary.

Loss of Bees and Equipment:
I understand that bees are living insects with a risk of loss of the Queen, swarming, absconding, failure to thrive or other unforeseen circumstances. I understand that the Instructors/mentors are not responsible for the loss of my bees due to the above circumstances and the instructors/mentors will not replace them. Instructors/ Mentors will have extra queens available when the packages arrive in case the queen dies in transit.

I understand that my hives are residing in a private area during the class, and that all precautions have been taken by Instructors/Mentors. The instructors/mentors are not responsible for the loss of my bees, woodenware, or any other equipment that may be lost, stolen, stored or damaged at the site.

Health and Responsibility:
I acknowledge and agree that NESARE Queen School, They Keep Bees LLC, and the guest instructors/ mentors are not responsible or otherwise obligated to attend to any injuries, stings or medical needs that may arise during any class, and I personally assume all risks and responsibilities for such injuries, stings and medical needs. Nothing about the fact of this waiver or any actions taken by any instructor/mentor is intended to create a special relationship between any of them and me.

An instructor may take an action during class that the instructor considers to be warranted under the circumstances regarding my health and safety. In case of an emergency (and what may appear to be a medical emergency) I authorize that the instructor secure for me, in advance, whatever medical attention and treatment appears to be necessary or prudent, including, but not limited to, the summoning of an ambulance. If I am incapacitated and unable to consent to the administration of medication and hospitalization, I agree that I shall bear all costs for any such medical attention and treatment.

Assumption of Risks & Waiver/Release of Liability: I understand the risks involved in participating in the Program and I hereby assume all risks and responsibilities for my own health and safety, whether or not stated in this waiver. I have no known or suspected medical reasons or risks or existing problems that preclude or restrict my participation in the Program, or make my participation in the class ill-advised from the standpoint of my personal health and safety given the risks involved.

In voluntary consideration for being permitted to participate in the program:
I hereby waive and release They Keep Bees, LLC and the guest instructors/mentors from all liability for any loss, bodily injury or damage I may sustain as a result of my participation in the Program, including but not limited to bee stings, trips, falls, cuts or continued medical care I may receive and any medical treatment decision or recommendation made by the instructors/mentors.

APPENDIX C: Bee School Waiver (cont'd)

I hereby waive and release They Keep Bees, LLC and the guest instructors and mentors, and agree to pay all expenses relating to any medical treatment and care I received resulting from my participation in this program.

I hereby waive and release, and agree to indemnify and defend They Keep Bees, LLC and the guest instructors/mentors, from any and all claims that any other person may have asserted against any of them for any losses, damages or injuries arising out of or connected with my participation in the program or any person associated with any of them.

Complete Agreement: I have read this waiver and understand it. If any provision of this waiver is held to be invalid or otherwise unenforceable, such provision shall be modified so as to make the provision enforceable, and the remaining provisions of this waiver shall continue in full force and effect. If such modifications are not possible, only then shall such invalid or otherwise unenforceable provision be stricken, but only to the extent unenforceable and the remaining provisions shall remain intact in full force and effect. This waiver is my complete and only agreement regarding the subjects covered. In signing this waiver, I am not relying on any representation, statement, or promise, oral or written of They Keep Bees, LLC and the guest instructors / mentors, or any persons associated with any of them, except what is expressly stated in this waiver.

Participant Signature:_____

Printed Name: _____

Signature and Printed Name of Parent/Guardian

_____

_____

Date _____