



Mentoring Yards & Queen Programs

Susquehanna Beekeepers Association

NOVEMBER 3, 2023



15+ year hobbyist beekeeper – 15 to 20 hives

EAS Master Beekeeper

Past President – NWNJBA

Day Job > Medical Affairs IT, Bristol Myers Squibb

Beekeeping Podcaster

Managed Mentoring Program for Getting Started in Beekeeping

**INTRODUCTION
– Kevin Inglin**

Our Home Yard



MENTORING YARDS

THE ENORMOUS BENEFITS OF A TRAINING APIARY

NWNJBA

Mentoring Yards

■ So Beneficial

- They are a key part of our beekeeping training program
- For new beekeepers...
There is really no substitute for hands-on training
- The mentoring yards also provide valuable club resources to the organization



1990's Echo Hill Park



ROUND MOUNTAIN APIARY



LAND of the Hunterdon County Park System



Training Apiary

Bathroom

Parking (Wet Weather)

Deer Path Branch of
YMCA of Bucks and

Deer Path Park



My first meeting 5/2009

Package Installation Demonstrations





Management Instruction Demos

Equipment Usage Demonstrations





Alternative Hive Use

Meetings During COVID



*And no one
gets upset*

WE TEAR OUR HIVES APART FOR TRAINING



Grooming – Future Presidents



NWNJBA VALLEY CREST MENTORING YARD

A New Opportunity

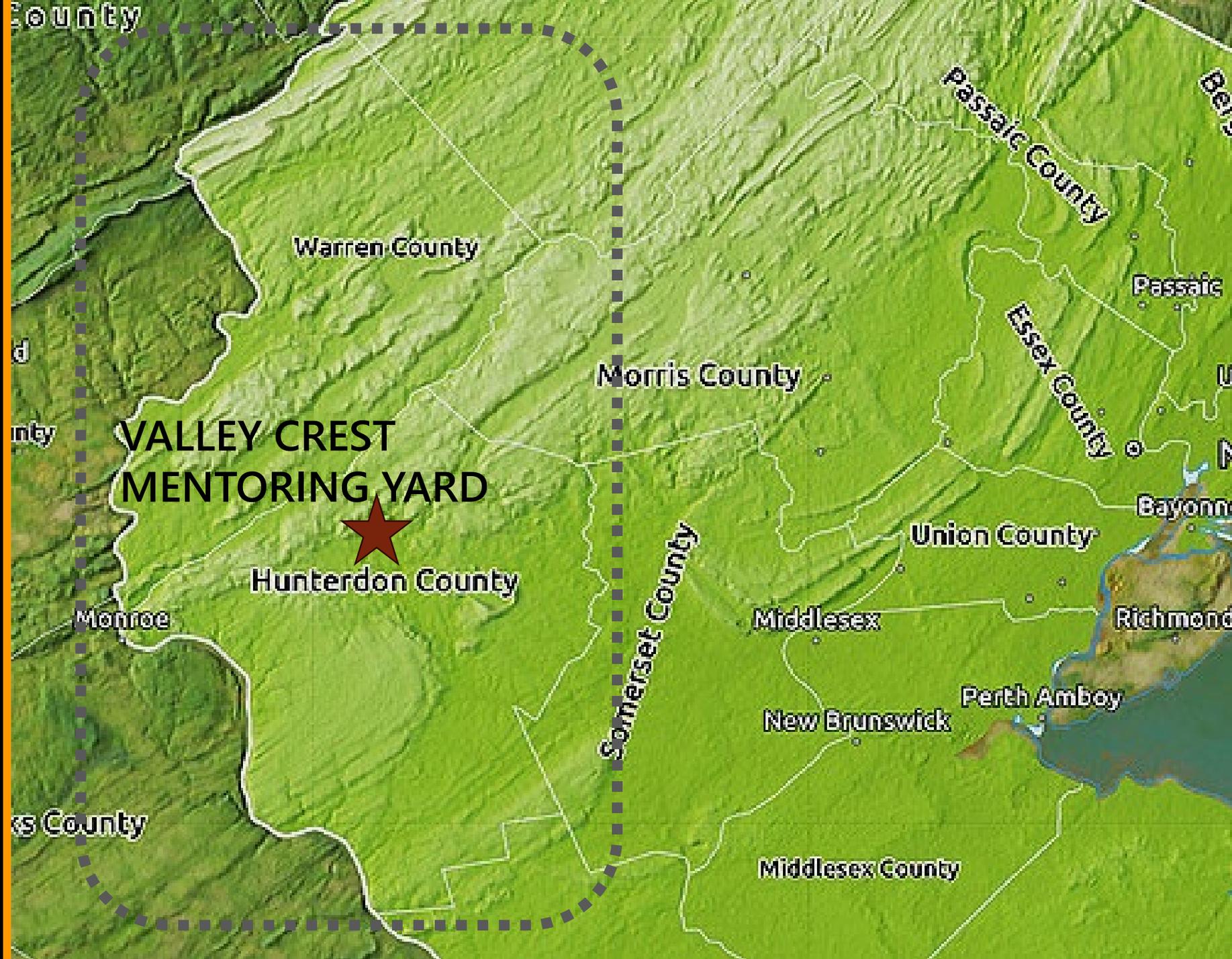
An aerial photograph of a residential neighborhood. A red circle highlights a specific yard in the center-left of the image. The yard is surrounded by green grass and trees. To the left of the yard, there are several houses with brown roofs. A road or driveway runs horizontally across the middle of the image, passing through the highlighted yard. The overall scene is a typical suburban residential area.

NWNJBA VALLEY CREST MENTORING YARD

A New Opportunity

Location

Our Mentoring Yard is central to our clubs coverage area of Hunterdon and Warren Counties





Cramers Creek

Cramers Creek

Cramers Creek

Valley Crest Rd

Valley Crest Rd
Cramers Creek

Spyglass Ct



NWNJBA

VC Mentoring Yard

- **2019 Partnership**
 - We are partnered with the Valley Crest Preserve operated by Grow-A-Row
 - They maintain the property and we maintain the hives
 - Multi-purpose facility
 - *Small Park & Trail*
 - *Boy Scout Camp*
 - *NW Mentoring Yard*

Field of Dreams



Field of Dreams



Field in Bloom

The plants have thrived, and the field is like nirvana





Full and Lush

The field supports not only the bees but a wide diversity of pollinators

Through the year

As the
seasons
progress
different
plants
emerge





Idyllic Apiary

Training and
Working bees
in the two
apiaries is
amazing



- Installing Package of Bees** Dump & Shake Method
1. Prepare the Space. - Assemble bjo with Supply & for this task.
 2. Prepare the Hive. - Remove center frames. - Install frame feeder & Syrup.
 3. Gear Up. Gloves, Veil, etc. - Relax. Move Slowly & Deliberately.
 4. Prepare the Package for opening. - Tap package on ground to get the bees off the can.
 5. Open Package. Check Queen. - Put a pushpin in the Queen Cage Strap. - Pry up staples to lift out can. - Cover hole with wood or cardboard. - Confirm health of Queen. Hold in warm pocket.
 6. Install worker bees. - Spray bees with sugar-water to minimize flying. - Tap package on ground, dump bees in. - Repeat to get most bees in hive. - Leave bees in front of hive until dusk.
 7. Return Frames to Hive. - Gently put frames back in. - Keep out 1 frame for next step.
 8. Install Queen. - Look inside Queen cage to find candy plug. Remove cork. - Put on inner covers. Screen facing front/back. Candy plug facing up. - Hang Rack on Top. Secure Strap around hive. Cork the smoker.
 9. Close Hive. Clean Up. - Congratulate folks! You're a beekeeper! - Write the date, weather, time of day & all observations.
 10. Write in Log Book. - Notice patterns of brood laying to determine if Queen released.
- Follow Up**
After 3 Days, light smoker than open Hive to see if Queen released.
- After 2 weeks**, inspect hive looking at frames for eggs. - Notice patterns of brood laying to determine if Queen released.
- Write observations in Log Book**

- Gather Supplies in a tote**
- Mixed 1:1 Sugar Water jug + spray bottle
 - Log Book + pencil, cell phone, camera
 - Smoker, fuel, lighter
 - Veil, gloves, etc.
 - Entrance reducer, feeder, sticks 3/8-1/2" thick
 - towel + trash bag to clean spills
 - A marshmallow, in case candy plug missing
 - Hive tool, pliers, flat screwdriver, thin nail pen knife or multi tool
 - Rubber Bands, thumb tacks
- First Hive? Establish**
- Fresh water



Individual Stands

We changed from the rail

- More room to work and setup
- Better Visibility
- We have hives spaced apart so we can operate stations





Ample Access and Parking – Dry Fields



A Local Boy Scout Troop also uses the property.
They maintain some buildings and portable
restrooms throughout the year

Mutual Benefits - Bathrooms

Omaha Nebraska – Behind the Bohemian Cemetery



Omaha Nebraska – Behind the Bohemian Cemetery



Omaha Bee Club Mentoring Yard









Round Hill Yard *Still there....*

■ Other Use

- We still maintain our second yard
- We occasionally host meetings there, but we mostly use Valley Crest
- This yard holds the bees that we maintain to make Observation Hives
- We also do Queen Rearing courses from this yard.



Round Hill Yard *Still there....*

- **Other Use**

- **Queen Rearing**



QUEEN REARING

SUSTAINABILITY THROUGH COMMUNITY REARING





LET'S TALK ABOUT QUEENS



A Model to Consider



SUSTAINABLE HONEYBEE PROGRAM (SHP)

Sustainable Honeybee Program is an all-volunteer, nonprofit group dedicated to providing educational and hands-on experiences to the regional beekeeping community. We offer our support to area bee clubs and hobby beekeepers in the NVA, MD & DC area. Founded by Billy Davis, a certified EAS Master Beekeeper, SHP aims to strengthen the beekeeping skills of beekeepers who work with us and are anxious to learn about stress-free beekeeping.

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SUSTAINABLE

Sustainable Honeybee Program is and hands-on experiences to the and hobby beekeepers in the NVA, Beekeeper, SHP aims to strengthen the beekeeping skills of beekeepers who work with us and are anxious to learn about stress-free beekeeping.

Billy Inspired us in New Jersey and we are building plans to consider his ideas about queen rearing and supplying quality queens to our region

Superior Mating Quality

□ Locally Reared Queens are Better

- *Said differently, Purchased Queens can be Problematic*
 - Pressures to mate early can result in poor mating
 - Mass Production and Low Drone Populations can result in poor mating
 - Shipping and handling can impact queens – post mating
- *Age and Mating Failures Impact New Beekeepers*
 - Poorly mated queens fail right away, or during the course of the season
 - 2nd Year queens, sold in Nucs, result in failures (2.5 Year Viability Factor)

HEAD-TO-HEAD; THERE IS A CLEAR WINNER

Purchased Queen

- Reared in Foreign Conditions
- Mating Quality Inconsistent
- Poor Introduction & Shipping
- Cost Consideration \$\$\$\$
- Hit-or-Miss Traits/Behaviors
- Hit-or-Miss Genetics

Locally Reared Queen

- Adapted to Local Conditions
- **Mating Quality is Superior**
- Started with Continuity
- Cost – Pennies on the Dollar
- Selected for Traits/Behaviors
- Genetic Selection Controlled

Purchased Queen

- **Reared in Foreign Conditions**

Bees shipped to you after being reared remotely are barely proven and not accustomed to local conditions

Locally Reared Queen

- **Adapted to Local Conditions**

Bees reared locally are attuned to conditions & will thrive due to be accustomed to the local environment – no adaptation required

Purchased Queen

- **Mating Quality Inconsistent**

Pressures to mate early in the season along with methods of mass production of queens can impact mating.

It is proven that a percentage of shipped queens are poorly mated

Locally Reared Queen

- **Mating Quality is Superior**

Locally reared queens, during the right time of year have far better nuptial conditions and can become operation in harmony with conditions.

Additionally mating takes place during optimal windows

Locally Reared Queen

- **Mating Quality is Superior**

Additionally mating takes place during optimal windows

- Worth calling out - **This is a super critical point** and a key to success
 - Personally, we would opt to rear queens at the peak of the system. This nets us:
 - *A large contingent of drones for our queen to mate with*
 - *Optimal resource availability and large workforces to take care of queens in development*
 - *Proper weather for queen rearing activities*
 - *And.... It coincides with the natural order of things – when nature raises queens*

Purchased Queen

- **Poor Setup & Shipping**

Mated queens, that are shipped to you, are often not permitted to lay long enough to be verified and get established.

Additionally, the stop and start for shipping is not conducive for a good queen introduction.

Locally Reared Queen

- **Started with Continuity**

Queens reared locally are placed in a colony to begin their journey and benefit from contiguous service.

They also do not suffer any negative impacts from shipping

Purchased Queen

- **Cost Consideration \$\$\$\$**

The price of purchased queens seems to go up every year.

The risk of failure, coupled with high costs extend queen purchased beyond the notion of just a part of doing business.

Locally Reared Queen

- **Cost – Pennies on the Dollar**

Once you learn how to rear queens, you find quickly that you can make a multitude all in one go.

With the agility of an over abundance of availability the costs become a non-factor

Purchased Queen

- **Hit-or-Miss Traits/Behaviors**

You are often left to procure queens on the word of the producer.

Sometimes this works out well. Other times it is simply conjecture and you get whatever they are telling and selling.

Locally Reared Queen

- **Selected for Traits/Behaviors**

You can directly observe the traits and behaviors of your breeding stock and make your choices.

The selection process is at least known to you *from the queen side* when you do it directly.

Purchased Queen

- **Hit-or-Miss Genetics**

Like the traits and behaviors, often the genetics coming your way are left to your producer.

In this way there are good and bad situations, and you are often subject to the *telling and selling*.

Locally Reared Queen

- **Genetic Selection Controlled**

When you choose the stock to breed from, and you had control of the genetic origins – you know what you are getting.

If you source genetics prior to queen rearing – you'll know what you have when you breed.

Sperm Diversity and Volume Matters

□ Research Spotlights the Problems

- *Queens are best to mate with numerous drones **as it provides the most genetic diversity.***
- *The more drones a queen mates with... the better*

More sperm in the spermatheca

- *Significantly better colony operation*

Less or Inadequate sperm in the spermatheca

- *Colony Failure or Poor Performance*

MATING AND SPERM COUNT MATTERS

Queens optimally will mate with a large contingent of drones.

More drones, more sperm and genetic material in the spermatheca

LOW SPERM COUNT IMPACTS

- *Risk of Failure/Poor Performance*
 - Queens with low sperm counts will fail quickly or in short order
 - They are rejected by the work force (low pheromone)
 - Or they lose the ability to fertilize eggs
 - They never achieve the potential – workforce is opposite of good mating and compromised

MATING AND SPERM COUNT MATTERS

Queens optimally will mate with a large contingent of drones.

More drones, more sperm and genetic material in the spermatheca

VAST GENETICS IN SPERMATHECA

- *Significantly better colony outcomes*
 - Better Colony Health
 - Better Immunity Profiles
 - More Diverse Workforce
 - More genetic materials result in a wider array of experience in the colony population
 - Fringe Capabilities in the Population

Sperm Diversity – An Example

- Fringe Capabilities in the Population

□ Fringe: Such as *Investigator Bees*

- *When resources in nature cease to exist, forage bees move on. **But do they?***
 - There is a type of bee in the genetic lineage that is termed as an **investigator bees**.
 - This bee's specialty, an inherited genetic trait, is to go back in time to a previously available resource, and see if it would bear fruit again.
 - When you have a queen that is well mated, this trait may be in the colony population. Colonies headed by poorly mated queens do not have this.

✓ Sperm Diversity – An Example

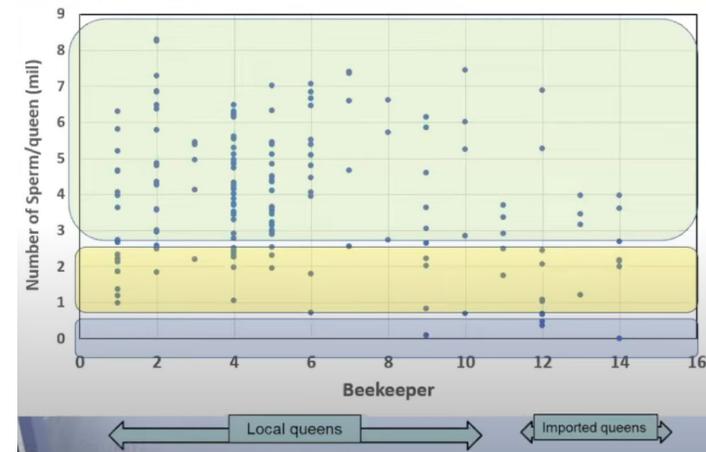
□ Investigator Bees

- *When resources in nature cease to exist, forage bees move on. **But do they?***
 - Imagine someone cutting the grass and cutting dandelions away.
 - In a few days new dandelions would bloom and return as a food source
 - With a population led by a well mated queen, one that has **investigator bees**, that population would reap the benefits.

Sperm Count Differences

□ Queen Productivity and Longevity

- *Queens with more sperm produce better pheromone*
 - Higher Pheromone productions makes for a more cohesive colony
- *More Sperm translate to longer life*
 - Queen samples from the US
 - 1,000,000 Sperm > Queen Rejected Outright
 - 1,000,000 to 3,000,000 > Queen Supersedures in Season 1
 - 3,000,000 to 6,000,000 > Queen Viability for 2.5 years
 - 6,000,000 to 9,000,000 > Superior Queen Longevity

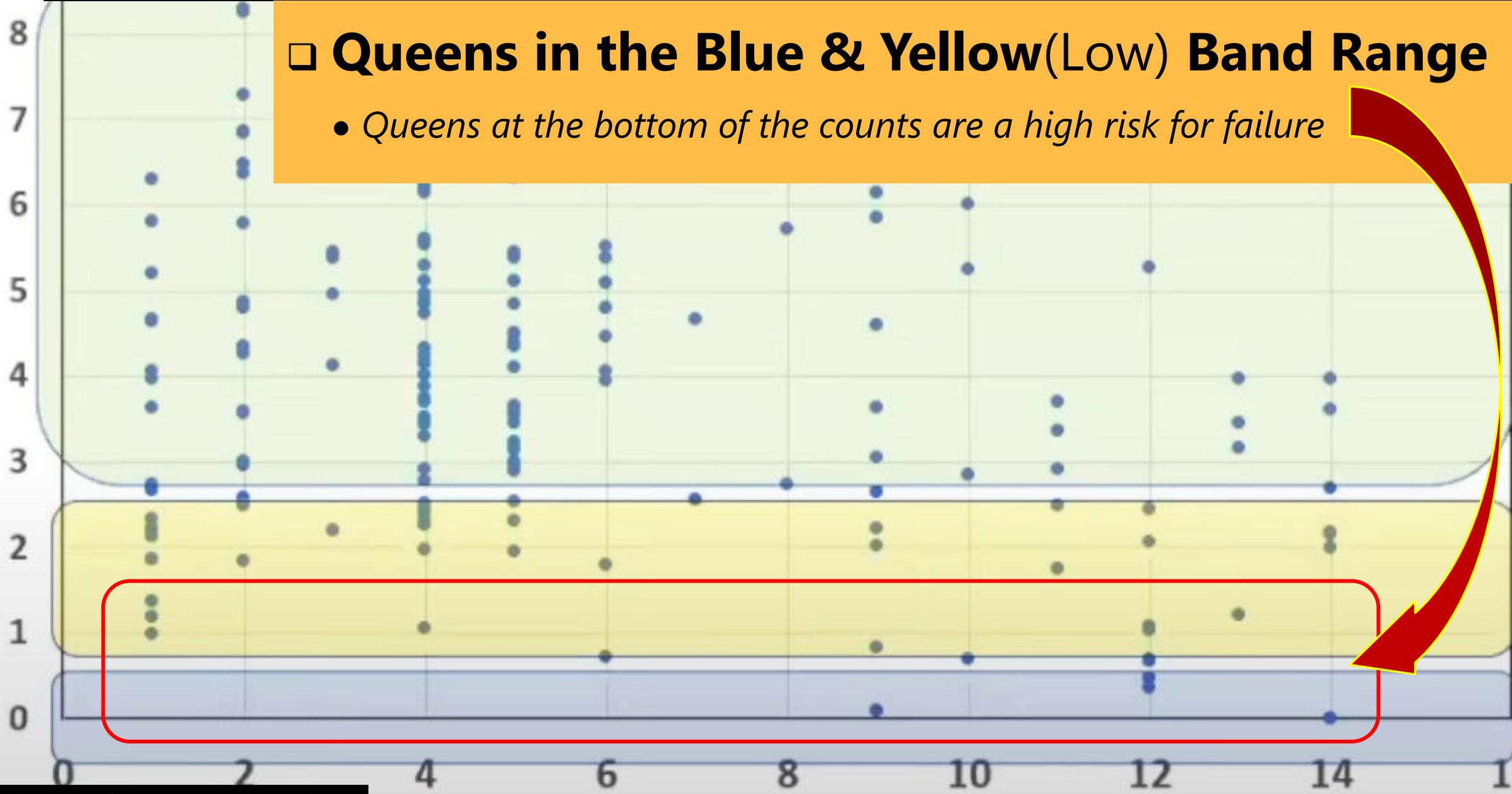


Quality of Queens: Sperm Count Study –Canada

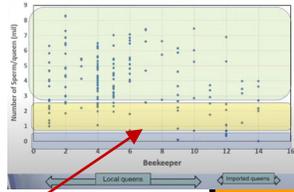
Number of Sperm/queen (mil)

□ Queens in the Blue & Yellow (Low) Band Range

- Queens at the bottom of the counts are a high risk for failure



Queen Longevity: General Outcomes



Sperm Count
10,000,000 to 9,000,000
million or higher

Exemplary Queens

are three to four year
with some unicorns going
four years duration
productivity, high colony
performance, exemplary lineage.

Sperm Count
1,000,000
(1 million or less)

Queens Rejected Outright

Queens will be poor performers
out of the gate.
These queens are often rejected
and replaced immediately by the
colony

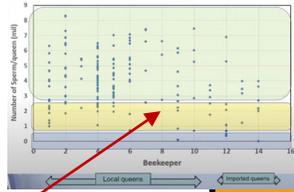
Sperm Count
1,000,000 to 3,000,000
(3 million or less)

Early Rejection Queens

Queens may start out with
patterns and operate normally.
By the time the nectar flow
their genetic material runs
Workers detect this and
supersede.



Queen Longevity: General Outcomes



Sperm Count

1,000,000

(1 million or less)

Early Rejection Outright

Queens will be poor performers from the gate.

These queens are often rejected and replaced immediately by the

Sperm Count

1,000,000 to 3,000,000

(3 million or less)

Early Rejection Queens

Queens may start out with viable patterns and operate normally.

By the time the nectar flow ends, their genetic material runs low.

Workers detect this and supersede.

Sperm Count

3,000,000 to 6,000,000

(3 to 6 million)

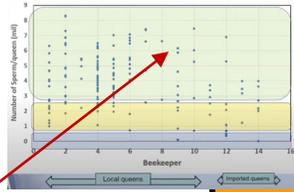
Typical Queen Performance

Queens on the low end will last for a year; making it through winter. They may fail in year two.

Queens on the high end will last it through year two; ending their tenure at about 2.5 years.



Queen Longevity: General Outcomes



Sperm Count
0,000 to 3,000,000
(3 million or less)

Rejection Queens

Queens may start out with viable sperm and operate normally. Sometime the nectar flow ends, and genetic material runs low. Beekeepers detect this and intervene.

Sperm Count
3,000,000 to 6,000,000
(3 to 6 million)

Typical Queen Performance

Queens on the low end will get by for a year; making it through the winter. They may fail in year two. Queens on the high end will make it through year two; ending their tenure at about 2.5 years (typical).

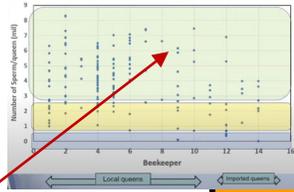
Sperm Count
6,000,000 to 9,000,000
(6 million or higher)

Exemplary Queens

These are three to four year queens with some unicorn queens beyond four years duration. High productivity, high colony performance, exemplary longevity.



Queen Longevity: General Outcomes



Sperm Count
00,000 to 6,000,000
(3 to 6 million)

Sperm Count
6,000,000 to 9,000,000
(6 million or higher)

Sperm Count
1,000,000
(1 million or less)

Queen Performance

Exemplary Queens

Queen Rejection O

Queens on the low end will get by year one; making it through the first year. They may fail in year two. Queens on the high end will make it through year two; ending their reign at about 2.5 years (typical)

These are three to four year queens with some unicorns going beyond four years duration

High productivity, high colony performance, exemplary lineage.

Queens will be poor performers and get rejected out of the gate.

These queens are often rejected and replaced immediately, leading to colony issues.



Making Queen Rearing Approachable

❑ Success Requires a Combination of Factors

- *It is an activity best taken on after a good foundation of beekeeping*
 - Queen rearing is a combination of the grafting component and the rearing component.
 - The rearing component – Based on the Doolittle Method requires a grasp of honeybee biology, best understood after a few years experience
- *Queen rearing is a compendium of technique, expertise, practice, tools and support from a community of practice*



It is immensely easier to learn and practice queen rearing when done with support



And Queen Rearing

Friends in Beekeeping

Queen Courses shortcut the learning curve





Build a Community of Practice



Build a Community of Practice – And Reap the Benefits



High Quality Queens

■ **Tangible Benefits**

- Available for distribution
- Available for emergencies
- Available for low cost
- Better regional genetics
- Goodwill for Beekeepers
- Education Opportunities
- High Colony Productivity
- Fewer Failures



Build a Community of Practice – Pay It Forward

QUESTIONS



EMAIL

Kevin@BKCorner.org

WEBSITE

www.bkcorner.org

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