

MITE MANAGEMENT

for the Sustainable Apiary

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Door County Beekeepers

THE STORY

15 years ago, I was sure I had it figured out.

I was going to keep bees without treating.

Rigorously, for 5 years, I tried it all:

IPM. Small cell foundation. Resistant queens from universities. Screened bottom boards. *Every method anyone had ever reported worked.*



"I killed thousands of dollars in bees."

THE STORY

Then I remembered the old-timer.

An experienced beekeeper had tried to warn me early on.

The genetics problem. What would happen. *I wasn't ready to hear it.*

Eventually I looked at my losses and said:

*“Copy the pros first.
Experiment later.”*

— the moment I gave in to what the old-timer already knew.

***Then I overcorrected.** I slammed the bees with synthetic miticides. They survived. But I'd look at my honey and wonder what was in it.*

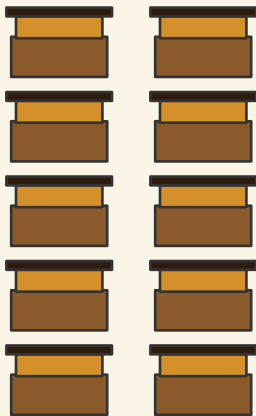
THE STORY

The math the old-timer knew.

Why I couldn't breed my way out of varroa.

YOUR APIARY

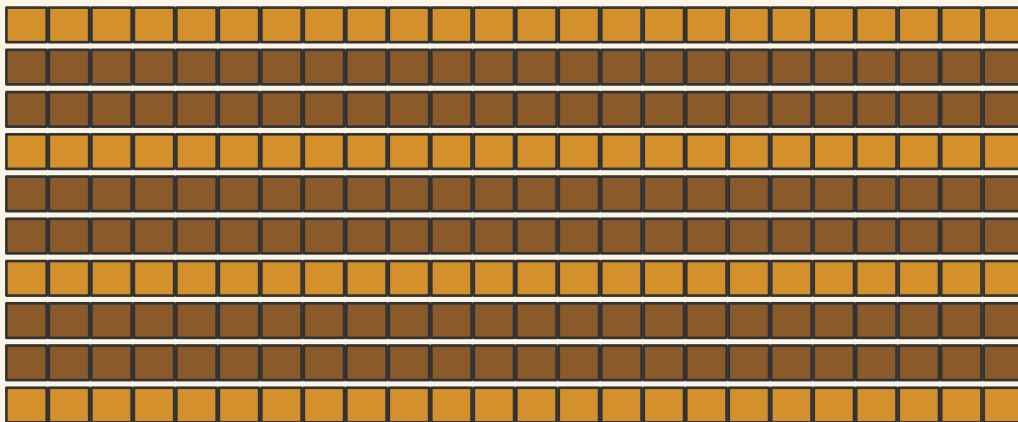
5–20 hives



You can select. Favor your survivors. That works.

A REAL BREEDING PROGRAM

200–1,000+ hives



Sister-group testing. Controlled mating. Tight inbreeding control.

The genetics problem: you can't overwinter enough survivors to build a breeding population — varroa kills them first.

THE BIG IDEA

Low and steady wins.

High mite counts for too long is what tips colonies over.

Mites + viruses + colony stress = poor overwintering.

The damage compounds.

Three pillars of a sustainable apiary.



MONITOR

regularly

You can't manage what you
don't measure.



UNDERSTAND

the biology

So you know why timing
matters.



TREAT

year-round, on a schedule

Rotate tools. Don't react —
plan.

Tonight: each pillar, then the season-long plan.

Mite biology: two phases, two opportunities.

PHORETIC PHASE

Riding on adult bees

- Vulnerable to most treatments
- OA vap kills here
- Where chemistry has reach

REPRODUCTIVE PHASE

Sealed in capped brood

- Protected from most treatments
- Population doubles ~monthly
- Only formic penetrates cappings

This is why treatment timing matters — and why one shot isn't enough.

What mites actually do to bees.



Feed on fat bodies

Not blood (Ramsey 2019). Fat bodies are the bee's liver and immune system — losing them is devastating.



Vector serious viruses

DWV, IAPV, others. For tonight: just understand the bees get hit with tons of viruses.



Compounding damage

Mite + virus + colony stress. It's not one thing killing the colony — it's everything at once.

THE WINTER BEE PRINCIPLE

*The bees you raise in August
are the bees that survive winter.*

Winter bees raised Aug–Sept must last **4–6 months**.
If they're damaged by mites and viruses, the colony can't make it.

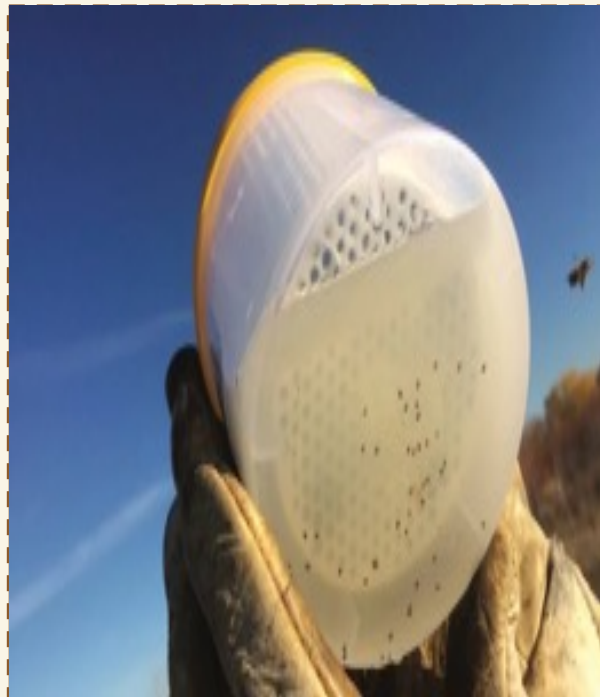
→ Get into winter as mite-free as possible.

Count mites the way the pros count mites.

Alcohol wash is the only method that gives **reproducible, accurate results**.

It's how universities and serious beekeepers count mites. Manage like a pro — count like a pro.

The 300-bee objection. Yes, 300 bees die. That's the price of saving 50,000. Anything less than accurate counting is guessing — and guessing kills colonies.



How and when to do it.

THE TECHNIQUE

Tool: Varroa EasyCheck (~\$30, purpose-built)

Solution: isopropyl (rubbing) alcohol

Sample: ½ cup from brood frame ≈ 300 bees

Queen: NOT in the sample

Read: mites per 100 bees (*9 mites = 3%*)

THE FREQUENCY

Ideal: monthly during season

Better: twice — mid-summer + post-treatment

Realistic minimum: once a year

If that's all you do — do it Aug 1–15.

TREAT THRESHOLD: 3% in season · much lower going into winter · *ideally close to zero by Aug 15.*

P I L L A R 3

The Treatment Toolbox

The Rotation Principle

No single treatment is the answer.

Rotate modes of action across the year.

Match the tool to the season and the colony.

6 tools · 6 modes of action

TREATMENT · SYNTHETIC

Apivar (Amitraz)

Synthetic strip · the workhorse

THE PITCH

Plastic strip releases amitraz. Effective, predictable, and easy. The most widely used treatment in commercial beekeeping.

WHEN TO USE

- Early spring — strips IN, then OUT before honey flow
- Fall — apply after honey is off, leave strips in
- When you need reliable knockdown

HOW

- Strips hung between brood frames
- 6–8 weeks for full course
- Bee contact transfers the active

WATCH OUTS

- Resistance is real — but rotation solves it
- Cannot be used with honey supers on
- Don't be the apiary that uses ONLY amitraz

Use it. Rotate it. Don't lean on it alone.

Oxalic Acid Vaporization

Sublimated OA · the Let It Bee protocol

THE PITCH

Oxalic acid sublimated into vapor that coats bees and kills phoretic mites. Cheap, effective, low residue.

WHEN TO USE

- Spring knockdown (low brood)
- Winter when broodless = highest efficacy
- When you need a clean knockdown with no chemistry left behind

HOW

- 4–5 grams per hive per treatment
- Every other day × 5 treatments (9 days)
- Multiple rounds catch mites emerging from cappings

WATCH OUTS

- Doesn't penetrate cappings
- Best when brood is low or absent
- PPE matters — respirator, goggles, gloves

One vap doesn't do it. The cycle is the treatment.

Extended-Release Oxalic

VarroxCare (legal) · Randy Oliver pads (the original idea)

THE PITCH

OA + glycerin matrix releases slowly over weeks. Works DURING brood-rearing because it keeps killing mites as they emerge.

WHEN TO USE

- After spring knockdown — install ~June
- Bridges all the way through summer
- Active until your next treatment

HOW

- VarroxCare: cardboard strips, EPA-approved
- Randy's DIY: 1:1 OA dihydrate + glycerin on Swedish sponges
- Approx. 55–60 sq in on top bars

WATCH OUTS

- Randy's DIY method is NOT EPA-approved
- VarroxCare = the legal version of the same idea
- Slow-release ≠ knockdown — plan accordingly

If you want to recommend this from the podium, recommend VarroxCare.

Formic Pro / MAQS

Formic acid · the only OA-class treatment that penetrates cappings

THE PITCH

Formic acid pads that vaporize through the hive. Kills mites inside capped brood — the only common organic-acid treatment that does.

WHEN TO USE

- Spring through fall — broad temp window
- When you need to hit mites under cappings
- When honey supers are on (approved for use)

HOW

- Two-pad method for double-deep + medium
- Temp window ~50–85°F
- Wash before AND after — verify it worked

WATCH OUTS

- Highest variability of any treatment I use
- Can briefly suppress queen laying
- Avoid in extreme heat or cold

Two pads, not one. And always confirm with a follow-up wash.

Apiguard (Thymol)

Thymol gel · different mode of action, hard to resist

THE PITCH

Slow-release thymol gel from a natural source. ~93% average efficacy. Different mode of action — protein denaturant, not nerve agent.

WHEN TO USE

- Late summer / autumn, after honey harvest
- When you want a non-synthetic in the rotation
- Warm conditions (60–105°F)

HOW

- Tray gel-side-UP on TOP of brood frames
- Thin spacer (eke) or empty super above — ~¾" headroom
- Two 50g trays, 14 days apart

WATCH OUTS

- Without the spacer it doesn't work — this is where people fail
- Can briefly suppress queen laying

Bob Binnie explains the spacer technique well — that's the trick.

T R E A T M E N T · R N A I

Norroa — watch this space.

EPA-registered September 2025 · active ingredient: Vadescana

Birth control for mites.

Doesn't kill them. Stops them from reproducing.

HOW IT WORKS

- First RNA-interference (RNAi) treatment for varroa
- dsRNA silences the calmodulin gene mites need to reproduce
- Targets Varroa destructor only — not bees or humans

WHY IT MATTERS

- Totally novel mode of action — not chemistry
- Resistance is essentially impossible
- Most exciting development in mite management in 30 years

I haven't used it yet. It's brand new.

Putting it all together: the season.

SPRING <i>Mar–May</i> Knockdown Pick ONE: Apivar OR OA vap (5×). Goal: take out overwintered mites before brood explosion.	~JUNE <i>after spring tx</i> Bridge Install VarroXSan (or OA sponges). Slow-release runs through summer brood-rearing.	AUG 1–15 <i>the must-do</i> WASH Alcohol wash to know your number. If it's your only wash all year — this is it.	AUG 15 <i>treatment in</i> Pre-Winter Tx Brood still strong — pick a through-brood tool: Apivar, Formic, Apiguard. Not OA (can't reach cappings).	LATE FALL <i>brood drops</i> OA Window 5× every-other-day if any brood left. Single vap if truly broodless.
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Winter: broodless OA vap = highest-efficacy moment of the year.

THE BIG TAKEAWAY

*Low and steady.
Year-round.
Different tools at different times.*

Monitor before. Monitor after.

The bees you raise in August are the bees that survive winter.

Protect them.

Q U E S T I O N S ?

*Let's talk about your
apiary.*

Jonathan Parsons · Door County Beekeepers