

Summer Preparation for Winter meeting #7

Tiffany Ayres, Master Beekeeper
Keys to Bees, Inc.
www.keystobees.com

SARE
Sustainable Agriculture Research & Education

2

Improving Survival Success Rates with Honeybee Colonies through Supportive Cohorts

Meeting #7 SUMMER PREP FOR WINTER

Project Leader: Tiffany Ayres, CEO Keys to Bees, Master Beekeeper
Project Consultant: Marty Jones, PhD
Project Partner: Kim Patten, Manager Diakon Wilderness Greenhouse
Project Partner: Lindsey Lyons, Director of Sustainability Learning Dickinson College

SARE
Sustainable Agriculture Research & Education

This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number PG24-021.

3

Sustainable Agriculture Research & Education

SARE made funding possible.

SARE is a branch of the United States Department of Agriculture with funding through the National Institute of Food and Agriculture (NIFA).

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

This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number PG24-021.

"Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture."

4

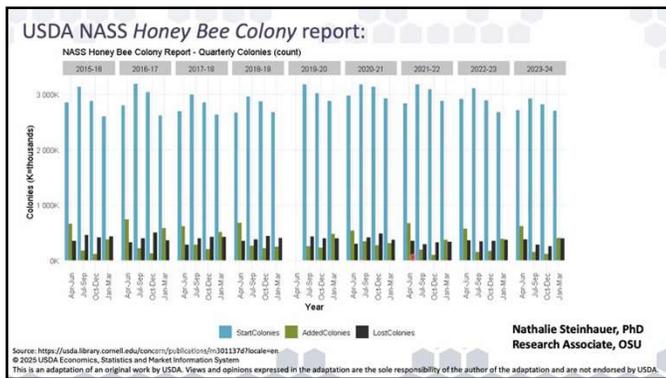
AGENDA – SUMMER PREP TO SURVIVE THE WINTER

US Survey Colony Losses

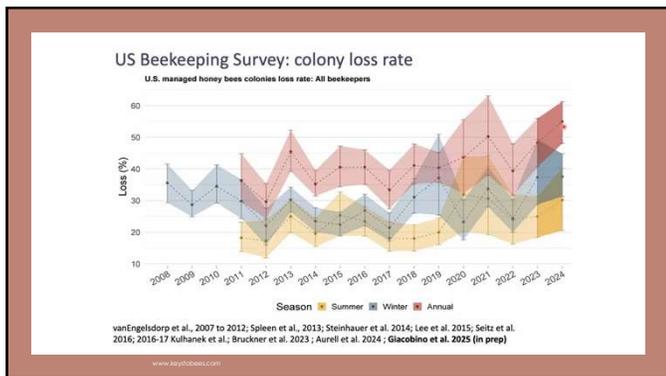
- Impacts of Varroa Mites – Dickinson's Apiary
- Ensure Quality Nutrition
- Establish Robust Numbers
- Confirm Strong Queen

www.keystobees.com

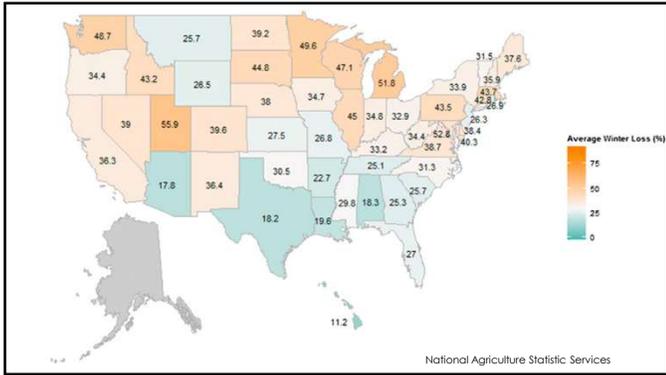
5



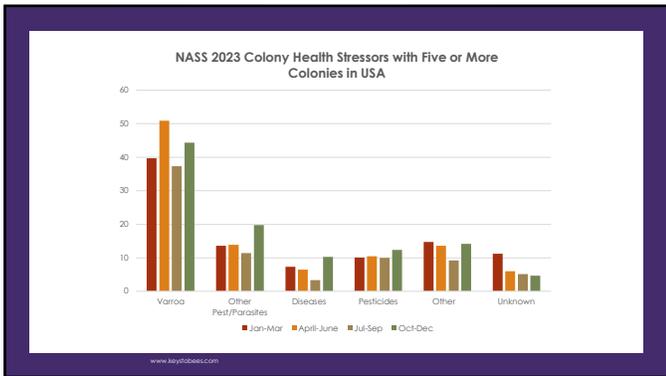
6



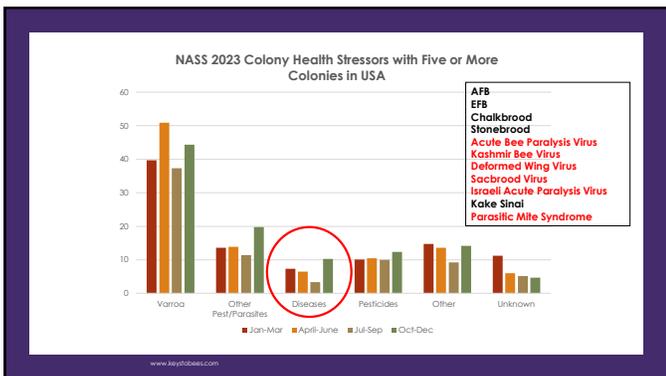
7



8



9



10

FIVE WAYS VARROA MITES IMPACT HONEY BEES

1	FEEDS ON FAT BODIES – SHORTENING LIFE SPAN
2	REDUCTION IN HYPOPHARYNGEAL GLAND SIZE – INABILITY TO FEED YOUNG
3	TRANSMIT VIRUSES – SICKEN OR KILL BEES
4	SUPPRESS IMMUNE SYSTEM – CONTRACTING OTHER ISSUES
5	KILLING ENTIRE COLONY

www.keystobees.com

11

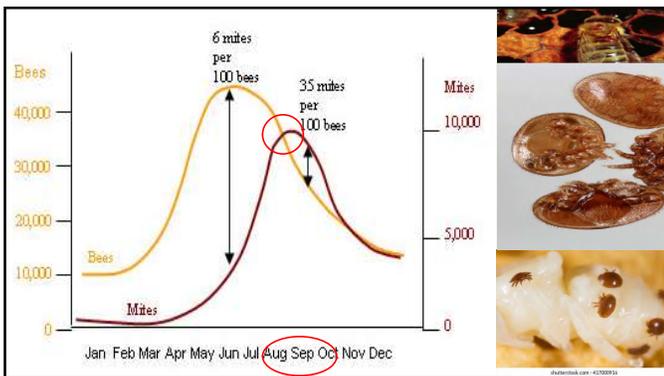
WINTER BEES



1	ENLARGED FAT BODIES – these act as nutritional reserve, storing proteins and carbohydrates to sustain them through the winter when foraging is limited
2	ENLARGED IN HYPOPHARYNGEAL GLAND – creating more Vitellogenin – allows bees to remain nurse bees for longer periods
3	SLOWER METABOLISM – lower metabolic rate, which helps them conserve energy and survive the colder temperatures. Has smaller amounts of Juvenile Hormone which causes the worker to transition between roles much slower
4	INCREASED AMOUNTS OF VITELLOGENIN – this protein, produced by fat bodies, crucial for brood rearing – allow nurse bees to secrete brood food even in the absence of fresh pollen – enhances the bees immune system and increases their lifespan
5	LIFE SPAN – unlike summer bees living 6 weeks, winter bees survive several months, even up to six months, to ensure colony's survival through winter

www.keystobees.com

12



13

WINTER BEE

Controversy on what specifically causes creation of winter bees &/or how different they truly are.....
 Hypothesis of environmental changes:
 temperatures, amount of food, amount of daylight



"Two Bees in a Podcast" is a weekly podcast hosted by Dr. Jamie Ellis and Amy Vu from the University of Florida's Honey Bee Research and Extension Laboratory
Episode 193
Winter Bees – Interview with Dr. Gabriela Quinlan (USDA-ARS Research Ecologist)

14

TRIP TO APIARY

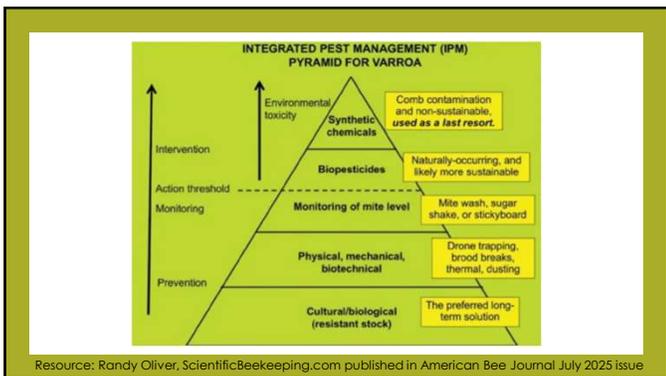
SUGAR ROLL vs. ALCOHOL WASH **COMPARISON**

TECHNIQUE OBSERVATION

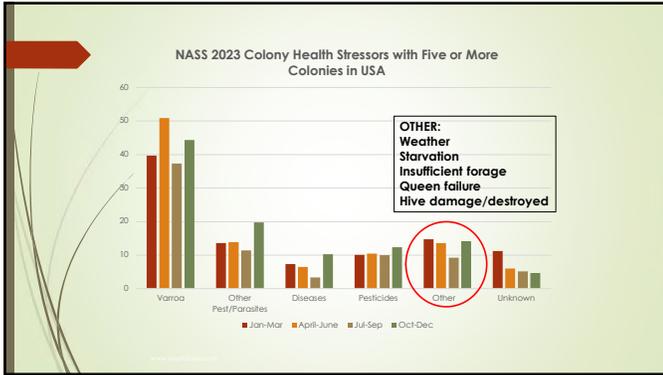
WALKING CONVERSATION:

- What mite test do you use?
- What IPM techniques do you use?
 - Screened bottom boards, drone frames, hygienic queens, etc.
- What has been most impactful lowering mite counts for you?

15



16



20

THERE IS NO TREATMENT FOR THESE VIRUSES BUT STRONG MANAGEMENT TECHNIQUES HELP REDUCE INFECTIONS

- 1 GOOD NUTRITION – HELPS BUILD STRONG IMMUNITY
- 2 STRONG POPULATION – WITH FERTILE QUEEN
- 3 FEW EXTERNAL STRESSORS – PESTICIDES, MOISTURE, PROLONGED CONFINEMENT, VARROA MITE #'S
- 4 STERILE EQUIPMENT BETWEEN INFECTED INSPECTIONS

www.keystobees.com

21



22



23

NEXT MEETING 7/9/25
Virtual Meeting
"Honey Extraction"
with David Papke (PA 2025
Beekeeper of the year)
6:30pm-7:30pm

7/23/25 Virtual Meeting
Full Q & A session also
reviewing initial test questions

SOUTH CENTRAL PA LOCAL CLUBS

YCBA – meets 4th Tuesday 7:00pm-9:00pm at Aldersgate Church, 397 Tyler Run Rd., York

CABA – meets 3rd Friday 7:00pm-9:00pm at HACC, 1 HACC Dr., Harrisburg

LCBS – meets 3rd Tuesday 6:30pm-8:30pm at Millersville University, Roddy Hall Room 261

PCBC – meets 3rd Sunday 2:00pm at Penn State Ext. Office, 8 S. Carlisle St., New Bloomfield

FCBA – meets 3rd Thursday 6:00pm-8:30pm at locations vary check on website fcbapa.com

PSBA – watch for summer picnic



24

THANK YOU

- KEYS TO BEES
- Tiffany Ayres
- www.keystobees.com
- saybees.apinary@gmail.com



25
