Welcome to Bee Boot Camp!

The Sweetest Way to Help a Veteran!
And to Help our Honeybees survive!
www.valorhoney.org

https://vimeo.com/737685519/160e37d315

WHY WE DO
WHAT WE DO

Valor Honey's primary mission is to help prepare returning Veterans with disabilities for careers in farming, primarily in Beekeeping.
And all who wish to become future beekeepers and honey producers.

- 2,300,000 Veterans and Transitioning Military, Post 9-11
- 35% with service derived disabilities
- 63% of our nation's farms are in last generation ownership.
- Need 1,000,000 new farmers in next decade to continue to feed our countries high demand for food.
- Beekeeping is farming; and essential in the pollination of crops

Our mission also includes...

- Enhancing the production of US certified Honey
- Funding our programs through honey sales *And Bee Sales and Donations!*
- Bringing honey fraud to the attention of American consumers.

76% OF HONEY PRODUCED IN THE U.S. IS FAKE

Kansas State University and VALOR Honey
American Honey Producers Association

American Honey Institute

Education
- *Basic*
- *Advanced*
- *Commercial*
- *Master*

Research
- *Honeybee sustainability*
- *Honey authenticity*

Certification
- *Authenticity testing*
- *Fully independent lab*
- *Standards*

Well Being
- *Integrated Therapy*
- *Resettlement*

Communications
- *Public awareness*
- *Bees and Honey*
- *Marketing*

Basic, ENTOM 485 **"Storey's Guide to Beekeeping"**

Advanced, "Beekeeping in Western Canada"

Master; "The Hive and the Honeybee; 2015 addition"

Commercial; Mostly hands on, Text being developed

Read, Read, Read…Research based is best

The Honeybee - A Critical Part of Our Ecology Or are they?

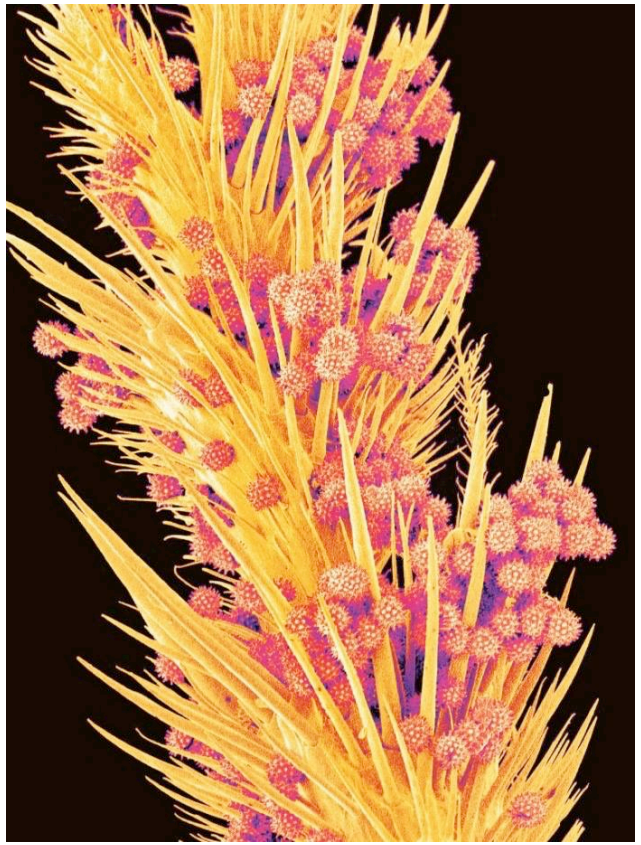
So critical that each bee is considered a head of livestock!


82% of all pollination
60% of all flora
33% of everything we eat
Without them we would have few apples, oranges, peaches, blueberries, cranberries, pears, beans, onions, celery, melons, nuts, many trees, alfalfa, clover, and almost all wild and domestic flowers and more; in fact of all the plant foods, we would have only wheat, rice, and corn to eat without them. We could not sustain ourselves as we do now without bees. Just a another insect? Clearly not! $35 Apple.

Pollination

Of great importance is the service bees provide in pollinating our plants; 60% of them and 33% of all we eat. Bees are used to pollinate alfalfa, soy beans, clover, mustard, canola, sorghum, almost all flowers wild and domestic, most of our trees, most vegetables, most fruits, nuts and many other agricultural crops. Almonds…the largest cash crop in California. Largest source of revenue for commercial beekeeping businesses.

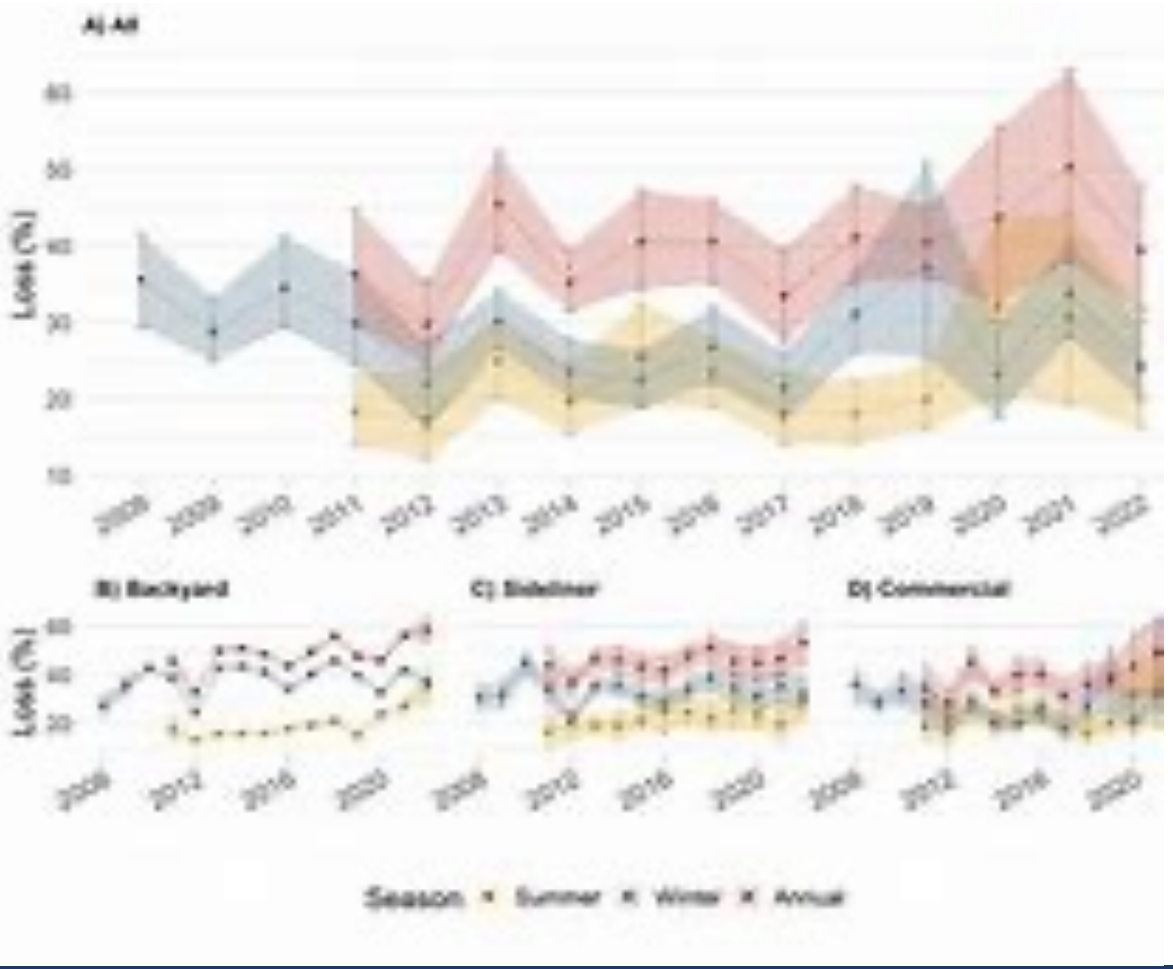
More hairs than we do…about 2 million.



Blow up of bottom portion of foreleg with pollen grains.

A pollen magnet

OK. They are critical to our food systems and of significant economic value. Is there a problem?



Losses approach 50% for past five years

Why? and what can we do? 4 factors

1. LOSS OF FORAGE
This is a bee desert…

The nation's forage picture is changing Significantly!

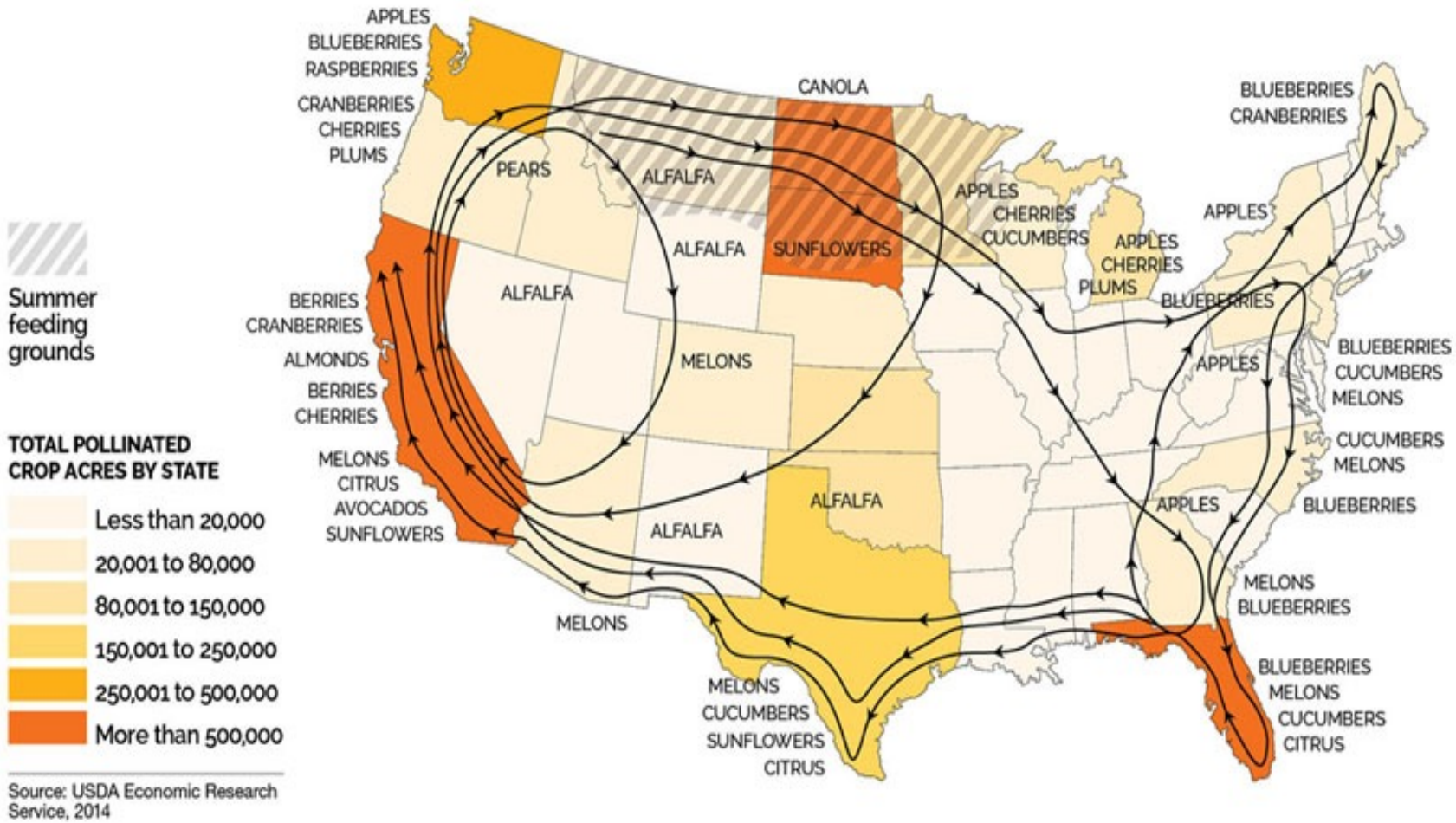
2. CHEMICALS

And nearly all field Corn is treated with A systemic pesticide. Many others.

3. BEE MANAGEMENT-2.5 MILLION COLONIES TO CALIFORNIA

342 Beehives loaded for California

Pollinator Movements in the United States



Source: USDA Economic Research Service, 2014

4. Entomologists…An effective solution please!

The greatest threat
to honey bees
World wide….
The Varroa
Destructor Mite

Fairly new……
Small Hive Beetle

Always there……
The Wax Moth

On the way?
Tropilaelaps mite

The next set of challengers…

Tropilaelaps mite,
Central Asia and expanding

Vespa velutina,
Yellow-legged Hornet
Southeast US, August 2023

Vespa mandarinia, the “murder hornet.”
Northwest USA, 2021

Brief Bee Biology

Head, Thorax, Abdomen.

Chitin Exoskeleton

Hemolymph

Wings

Probiscus

Honey Stomach

Pollen Transfer

Apis mellifera-"Honey bearer"

- **Average hive 60,000 bees**
- **2,000,000 blossoms; 50,000 miles; one pint (1 lb) of honey**
- **Average hive in Kansas 65 pounds for harvest.**
- **Pollinate millions of plants.**

The way bees communicate and cooperate is fascinating. They are a model of community effort…and a barometer of our environmental stewardship.

A Single Queen.

1 and 6

2 and 7

3 and 8

4 and 9

5 and 0

One queen. Primary function, lay eggs, and lots of them, 2000 or more a day at peak. Her pheromones (and brood pheromones) keep the hive a colony. All the bees in a hive are completely loyal to her. Many beekeepers replace her annually. The bees may do so also. 16 days to hatch, 4-5 years. Fewer hairs, wings halfway back, shinier, longer. Italian, Carnolian, Russian, Buckfast, etc? Genotypes narrowing. Some marked.

Worker Bees

99.99% of the bees are female workers

Live five weeks (except winter)

Arrives 21 days after an egg is laid

Begins work immediately

16 or 17 different jobs

3 weeks, forager

Seeks out pollen and nectar

Processed by hive bees into honey, royal jelly and bee bread

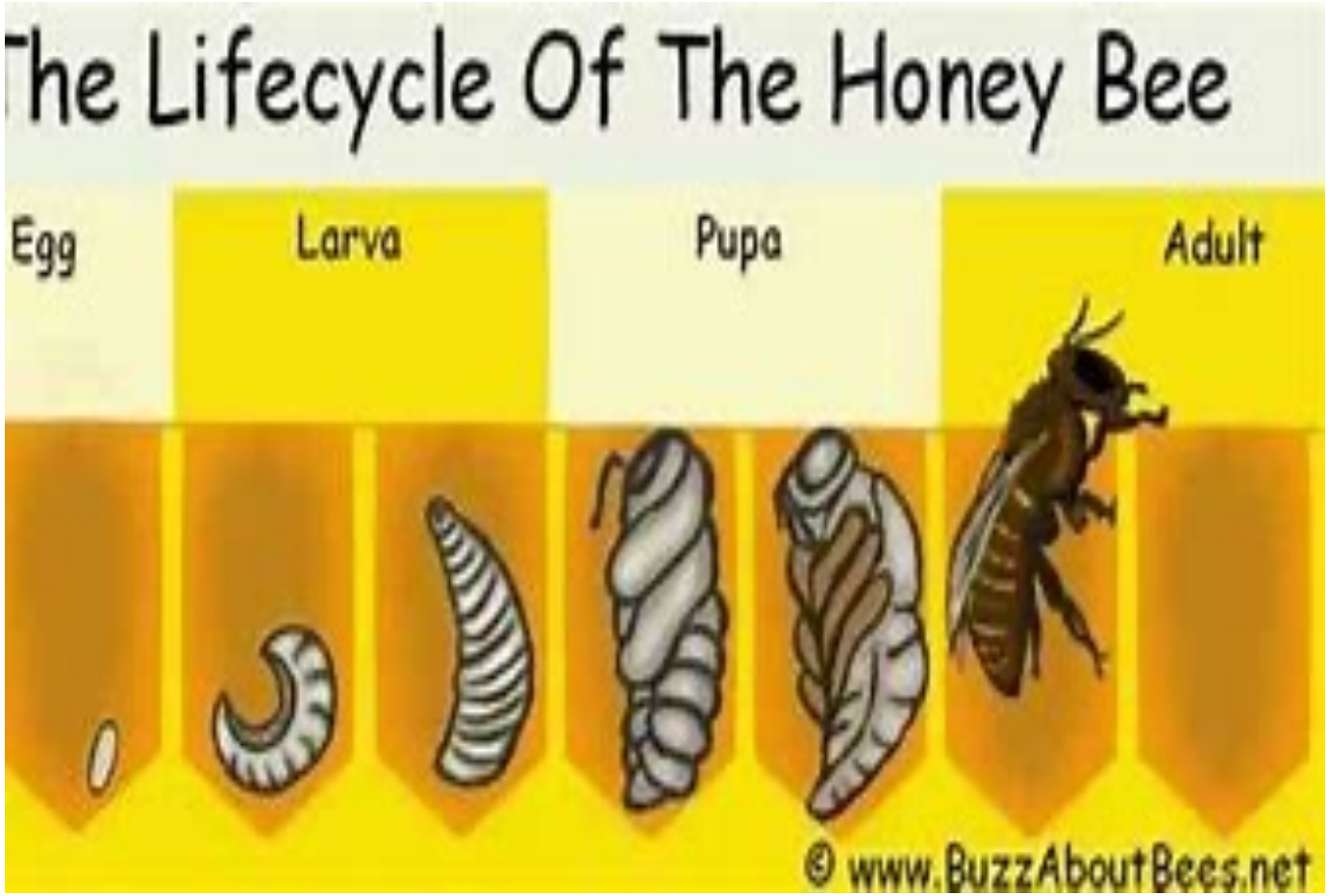
About 1/12 TSP of honey

Fly as far as 3 miles out, recruits others

Flies to death in this quest

The Drone

- Male
- Unfertilized egg 26 days
- Single purpose
- Accepted in all hives
- Flies to a DCA
- Mates and dies
- Forced out during late summer



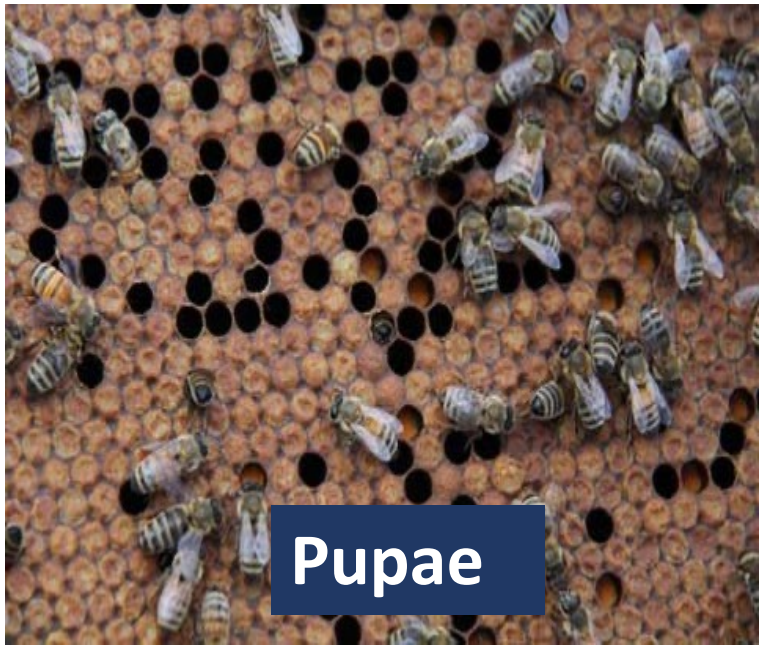
Worker 3 days an egg, 6 days a larva, 12 days a pupa, emerge at 21 days
Drone 3 days an egg, 6 days a larva, 17 days a pupa, emerge at 26 days
Queen 3 days an egg, 6 days a larva, 8 days a pupa, emerge at 16 days

Egg to Larvae to Pupae to Adult

Eggs

Eggs to Larvae

Larvae

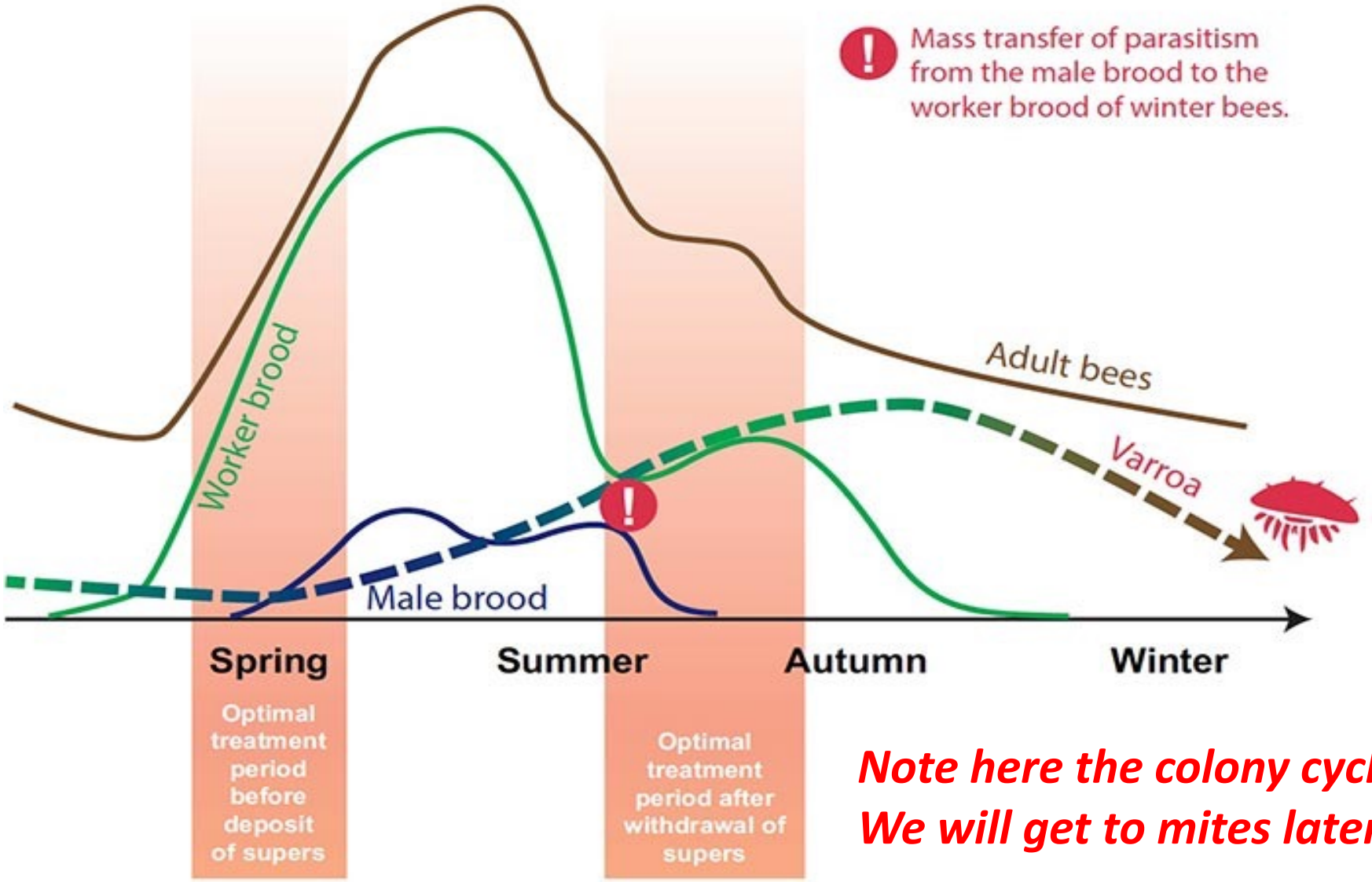


Pupae

Adult

Brood Pattern

The Life Cycle of a Bee Colony



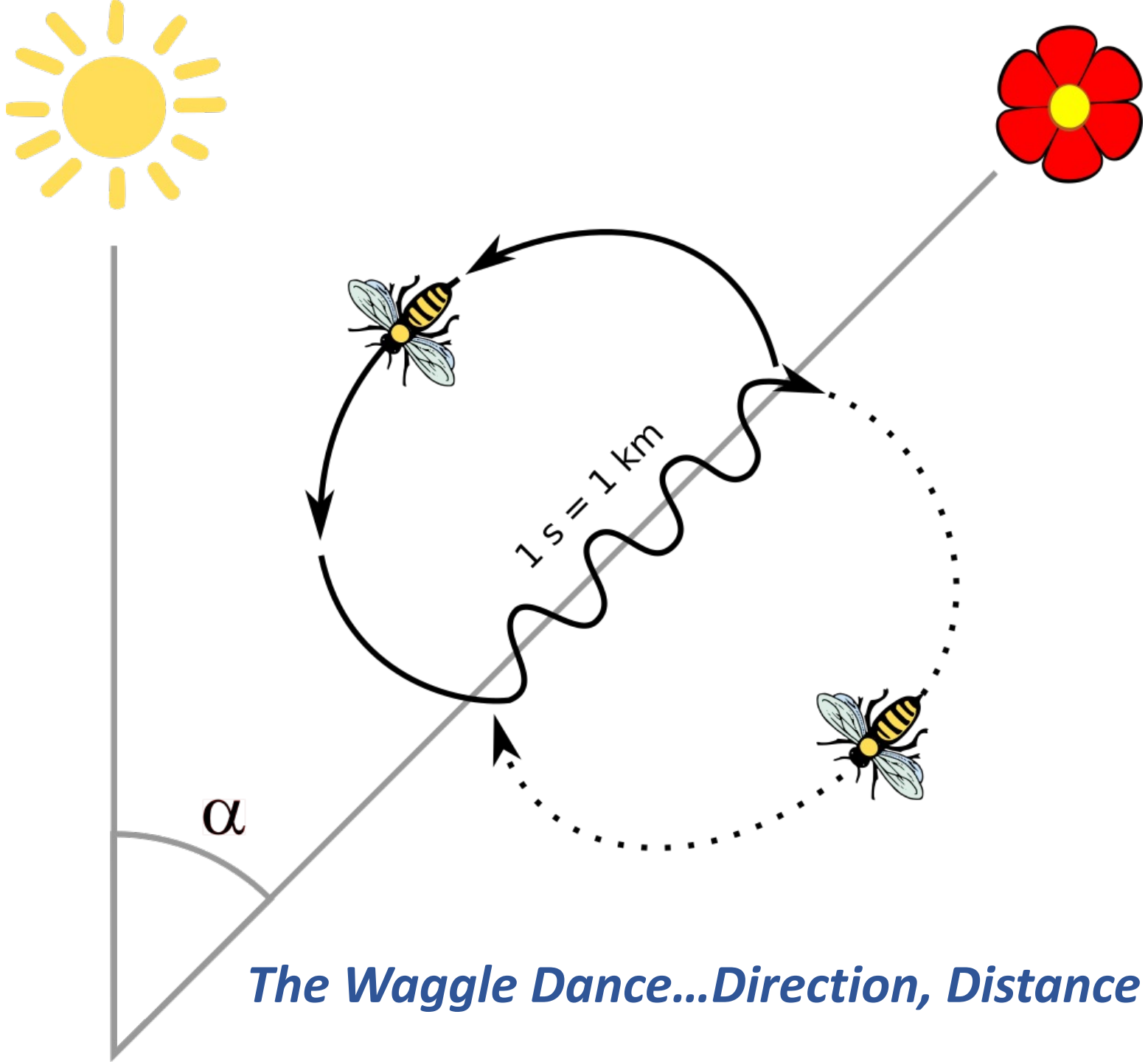
Note here the colony cycle.
We will get to mites later.

Communication….As far as we know!

- *Able to message entire colony within seconds….*

- *Alarm…Pheramones and buzzing intensity*

- *Location…Waggle dance for direction and distance*
  - *Nectar*
  - *Pollen*
  - *Water*
  - *New nest site*
  - *Sap for Propolis*



The Waggle Dance…Direction, Distance

Swarming…A natural means of expansion

- Half departs with the queen
- Half remains in the hive
- New queen is born
- Caused by overcrowding, usually
- Beekeepers can reduce the tendency
- Not always preventable.
- Swarm remains outside; bivouac
- Waits for scout bees to find a home
- Important to quickly catch the swarm
- See a swarm? Catch or call

In every hive……..Varroa Destructor Mite

Fairly new……
Small Hive Beetle

Varroa Destructor

Always there……
The Wax Moth

On the way?
Tropilaelaps mites

We'll learn how to deal with them later in this presentation.

Standard Hive Set Ups

1. 4 Way or 6 Way Commercial Pallets

- Easily stacked and designed to load for transport

- Faster to maintain
  Closeness requires balance

2. Stand alone hive that most begin with…

Let’s build one!

Equipment

- Hive tool…or two
- Bee Brush
- Smoker, fuel, lighter
- Gloves
- Suit or at least a veil
- Feeders and sugar (Details later)
- List for you

The sting

Remove the stinger easily with fingernail

- Bees sting to protect the hive
- Quite docile, but…wear protection!
- Beekeepers are not stung often
  - Wear protective equipment
  - Work slowly and calmly
  - Use smoke to calm the bees, sparingly
- More agitated with bad weather, bothered by animals or harvesting honey

https://youtu.be/lzVe3lyf4Fg?si=c8oluI56QWYuLzG0

- ***Locating your hive***
  - *S, SE entrance*
  - *Windbreak, Full sun*
  - *Forage*
  - *Water*
- ***Moving a Hive***
  - **1 foot or 3 miles**
  - **During the night, early morning**
  - **Block them, Ratchet straps**
- ***Feeding Them***
  - *Spring, Fall, Winter*
  - *Types of Feeders, Demo*
- ***Winter***
  - **Cluster**
  - **Cleansing flights**
  - **Eggs in Jan, Feb**

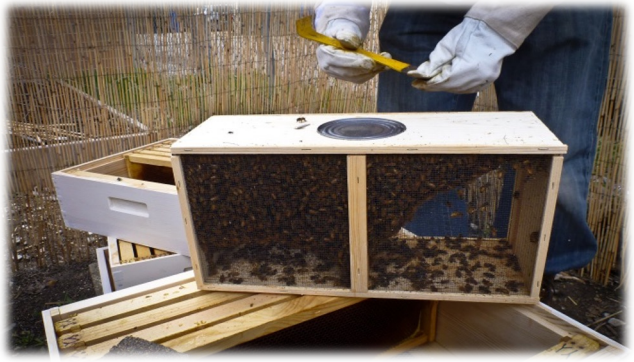
Ventilation

Air flow in the hive

- Positive air flow is a must
- Keep the entrance open
- Top entrance? Vent?
- Summer…Vapor expulsion and Cooling
- Winter … Warming and expulsion of excess vapor

So how and where do I get my bees?

Packages....Usually 3 pounds. About 12,000 (3.5 K per lb) bees and a caged queen



NUC or Nucleus Hive ... 4 or 5 frames of bees with a laying queen, brood

Splits...Multiple colonies from one

Queens and/or Queen Cells

Swarms or Cut Outs...
Vary in size

Packages or Nucs or 10 Frames ?

DriftWatch - Home

https://driftwatch.org

Not syncing

driftwatch
Specialty Crop Site Registry by FieldWatch

Home About FieldWatch Map Order Signs Contact Us

My FieldWatch

Username Password Log In

Welcome to DriftWatch™

Communication + Cooperation + Collaboration = Successful Co-existence

This site is a voluntary communication tool that enables crop producers, beekeepers, and pesticide applicators to work together to protect specialty crops and apiaries through use of mapping programs. It is not a substitute for any state regulatory requirements.

For more resources and information, please visit **FieldWatch, Inc.**

Access My Map

If you are a producer or an applicator and already have a FieldWatch, BeeCheck, or DriftWatch Account, log in here.

Login

Username:

Username

Password:

Password

Log In

Don't have an Account yet?

driftwatch Specialty Crop Site Registry by FieldWatch

Map My Specialty Crops

Click here to sign up as a commercial specialty crop producer.

beecheck Apiary Registry by FieldWatch

Map My Apiaries

Click here to sign up if you only keep bees.

fieldcheck By FieldWatch

Applicator Registration

Click here to sign up if you are an applicator.

Type here to search

DriftWatch - ... bee - Search ... Adobe Premi... Bee Presentat...

8:27 AM
7/11/2020

Queen Management.....Central to Colony Success

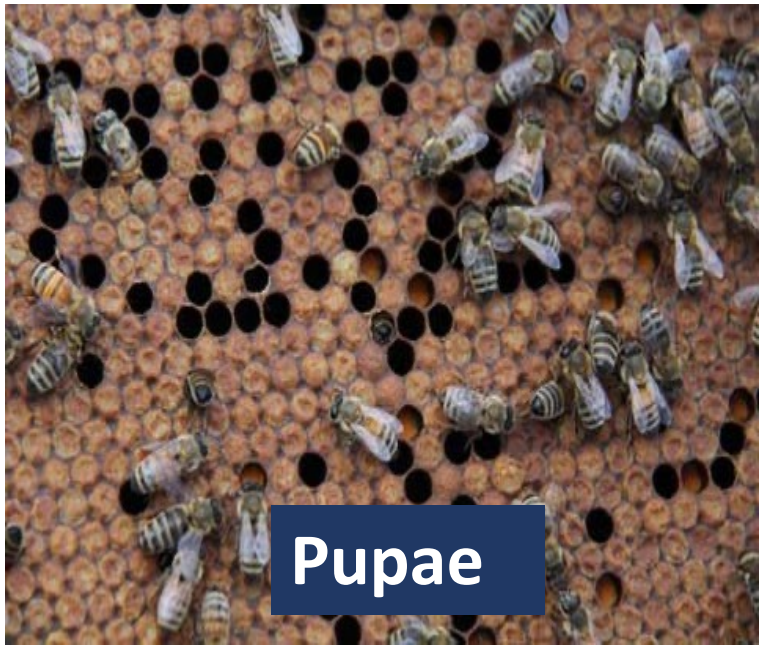
- Queen sources and breeding important
- Buy them
- Make them
- They will make some of their own
  - Supercedure
  - Swarming
  - Emergency
- Replacing them Periodically
- Splitting

Egg to Larvae to Pupae to Adult X 2

Eggs

Eggs to Larvae

Larvae



Pupae

Adult

Brood Pattern

Africanized Honey Bee AHB

- *Slightly smaller*
- *Slightly faster*
- *Will follow up to 1 ½ miles*
- *Extraordinary defensivenes*
- *Can work them, but…..*
- *Swarm often*
- *Texas A&M Study…..*
  - *82% of bee checked in South have AHB alleles*

How can we deal with these problems?

In every hive……..Varroa Destructor Mite

A new arrival……
Small Hive Beetle

Always there……
The Wax Moth

For the Small Hive Beetle (SHB)

- Keep the colony strong!
- Use Swiffer Pads
- Use Beetle Blaster

For the Lesser and Greater Wax Moth

- Keep the colony strong!
- Keep the colony strong!
- Inspect every 10 days!
- Freeze frames with eggs, larvae

For Varroa Mites

- Active monitoring
- Mite counts
- Treat, treat, treat!

Go to Varroa presentation

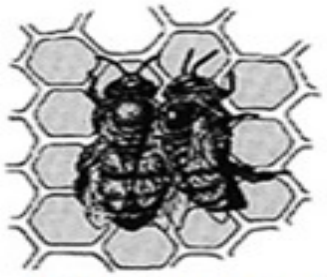
Taking the Destructor out of Varroa Destructor Mites…..or can you?

My hive is strong, should I be concerned?

So why should this tiny creature concern you?

- **They are in your hive! All of them.**
- **If you do nothing, you will lose your hive to them (70-80%).**
- **They carry a number of diseases that effect your bees.**
- **They are increasing as your bee population decreases.**

Mite Life Cycle



10 Mites transfer via close contact between bees.

1 Adult bee with Varroa feeding on hemolymph

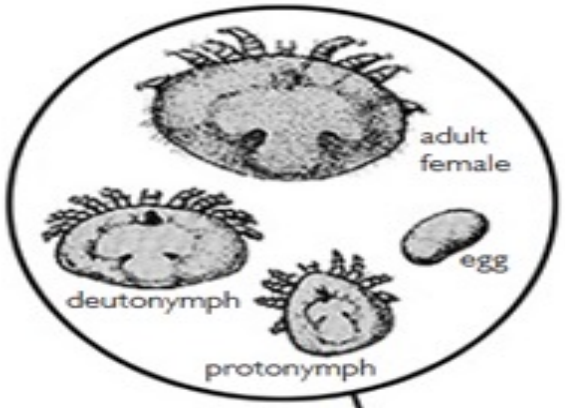
2 Mite enters cell with larva of 5- to 5½-days.

Cell capped

3 Mite moves underneath larva, into bee food.

4 Mite feeds on prepupa.

5 Female lays first egg 60 hours after cell is capped, and subsequent eggs at 30-hour intervals.



6 1-6 eggs develop from egg, to larva, to protonymph, to deutonymph. The developing mites feed on the bee, damaging and thus leaving the bee exposed to pathogens.

9 Adult females leave cell with the emerging bee. Male and immature stages of mites stay in cell.

3 new Mites born

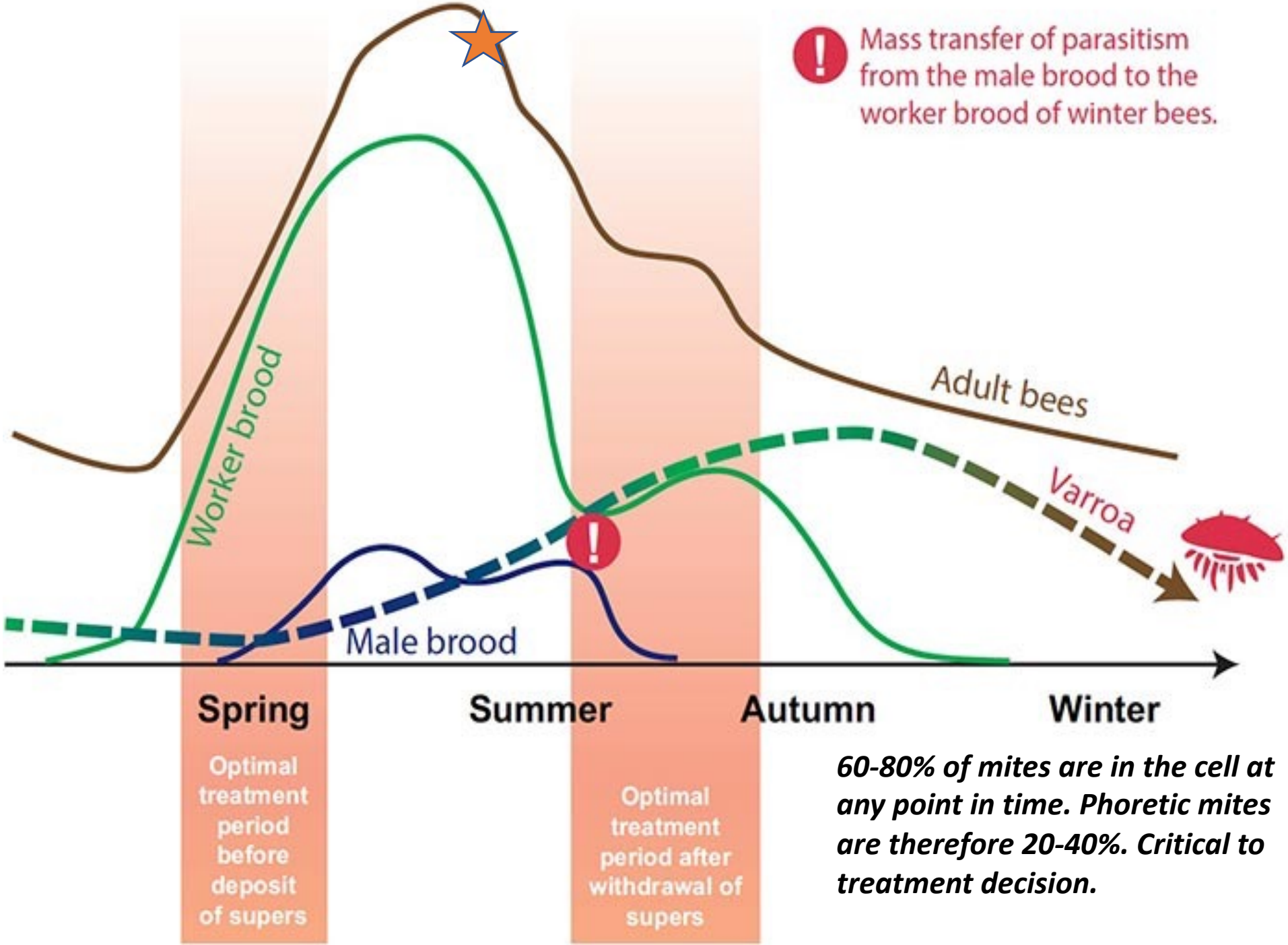
8 Mating begins within the cell.

7

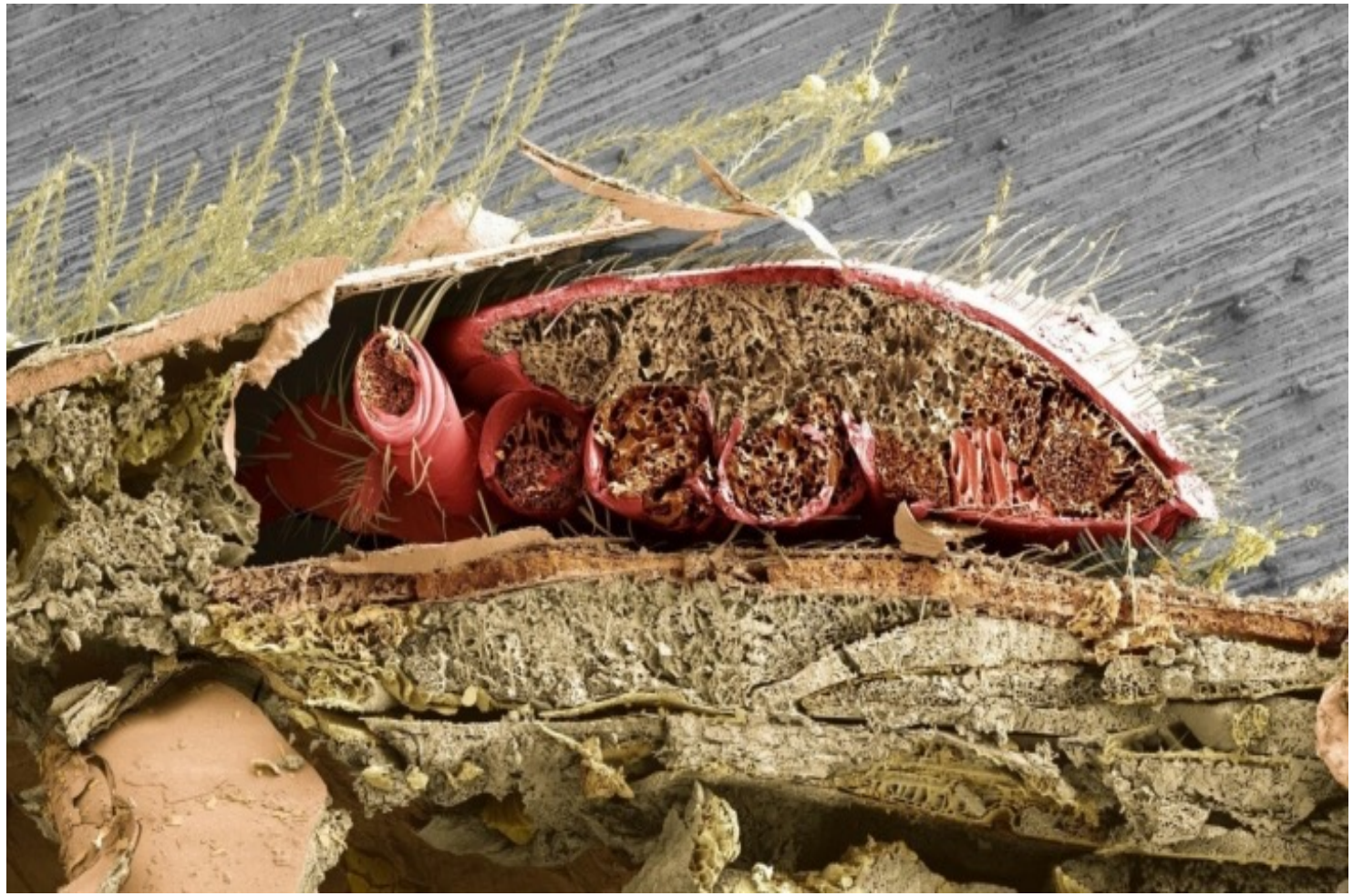
5-6 days, adult male

7-8 days, adult female

Adapted from illustration by B. Alexander



60-80% of mites are in the cell at any point in time. Phoretic mites are therefore 20-40%. Critical to treatment decision.



How do I know whether I should treat or not?

Visual

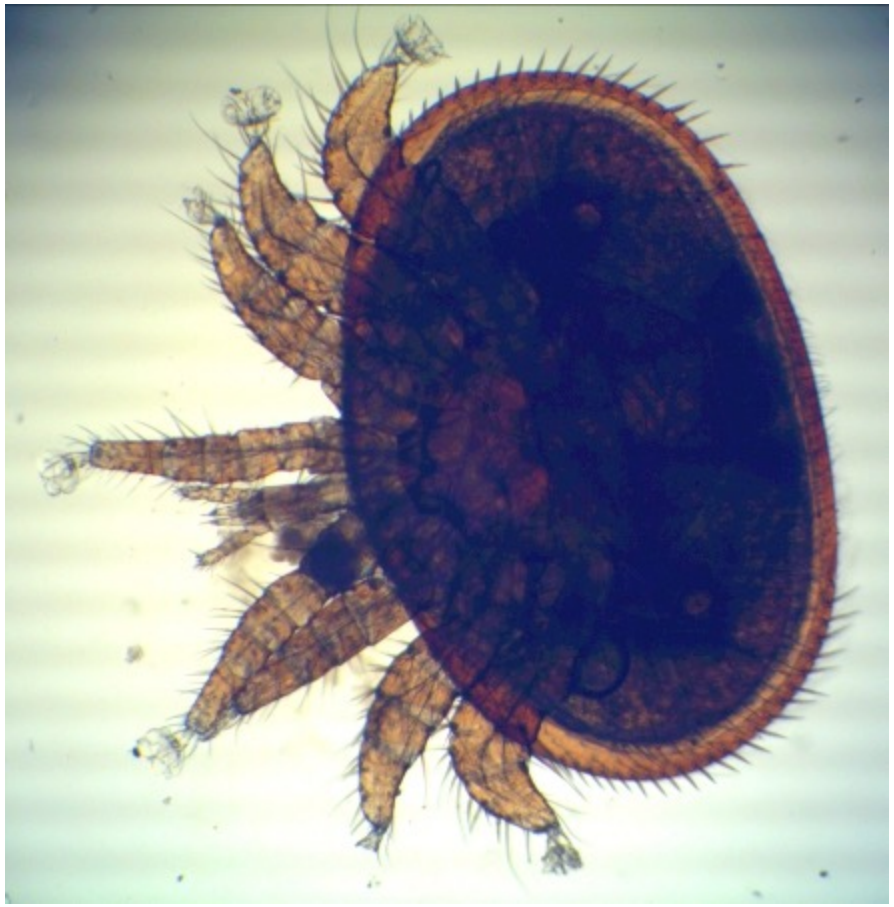
Sticky Board

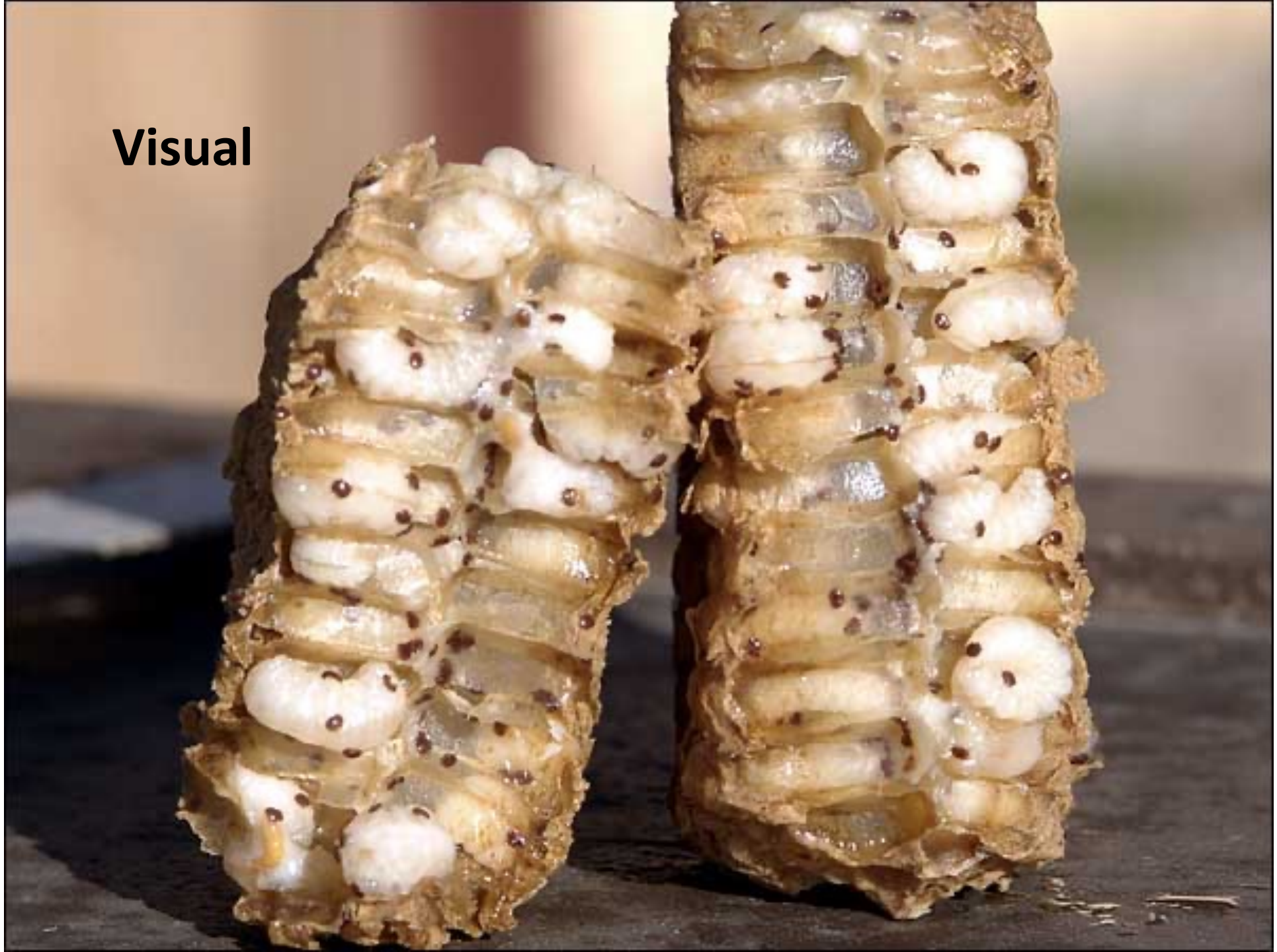
Sugar roll method

Ether or alcohol method

3-4 per 100 bees; treat.

60-80% in the cell!




Visual

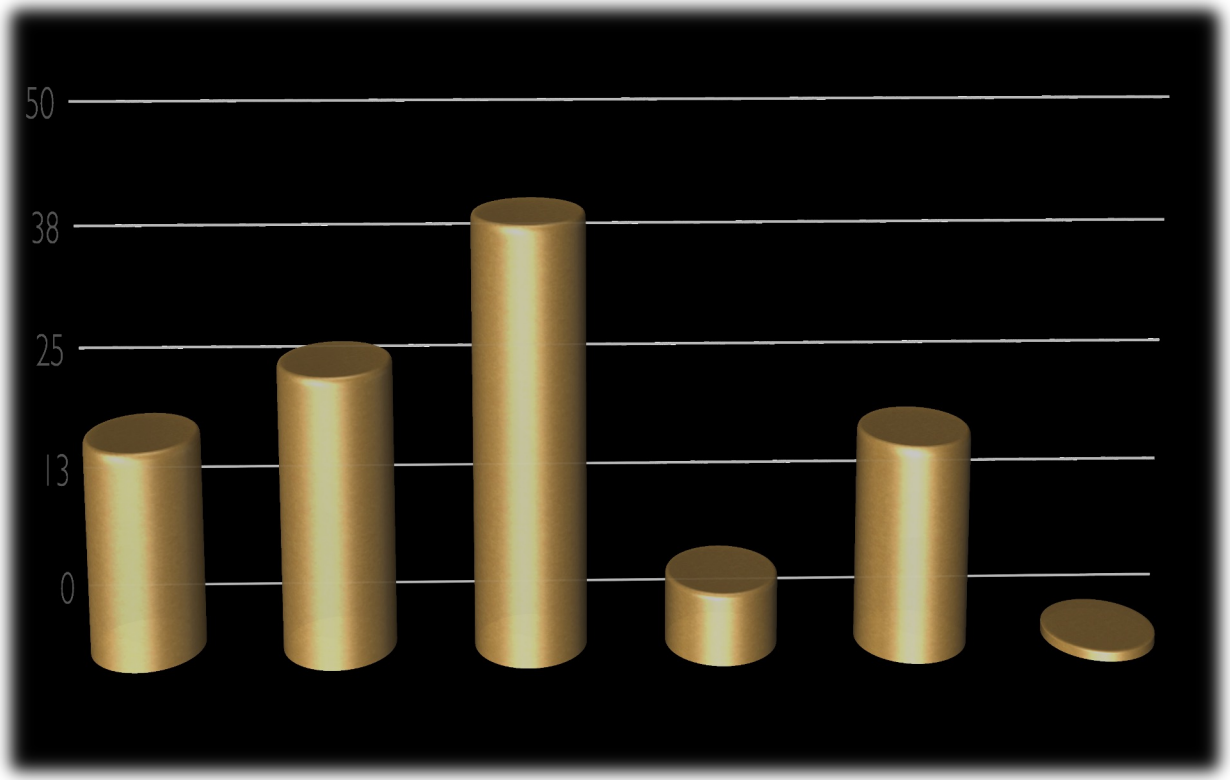
Sticky Board; Crisco or Vaseline

Sugar Roll

Ether or Alcohol Wash

What should I treat them with?

MITE TREATMENTS / DAYS/BASE

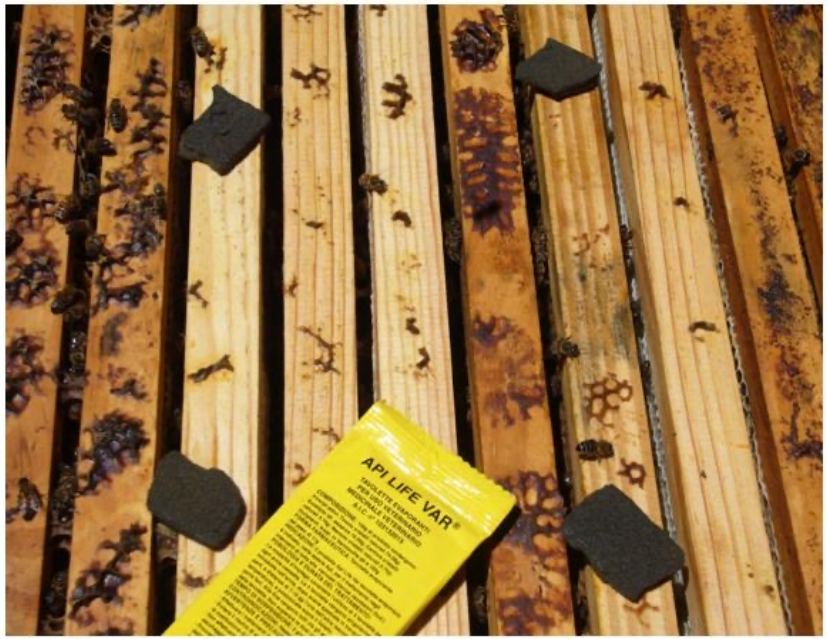


Hopguard	Apiguard	Apivar	MAQ/FP	Api Life Var	Oxalic Acid
14	28	42	7/14	21	1
Hop Beta Acids	Thymol	Amitraz	Formic Acid	Thymol, Menthol	Dicarboxylic Acid
Strips	Gel or Pad	Strip	Pad	Wafers	Drizzle, gas, pads coming

Brood Break Method


Hopguard; note the
Gloves. 14 days.

Apiguard, Api Var (Amitraz) and Api Life Var.



Apilife VAR package and one of the wafers broken up into four chunks and placed on top bars. Just looking at this photo makes my eyes water!

- Wear gloves.
- Do not breathe directly or get on skin. Burns!
- Stay upwind.
- Follow the directions.

Apiguard gel, bulk pack. Approximately 25g on a hive tool.

- Individual packets or bulk.
- 3 treatments over 42 days
- Or 2 treatments over.
- Kills a lot of brood.

Resistance

Mite Away Quik Strips (MAQS) or Formic Pro….Formic Acid Gel Pads. MAQS 7 days, Formic Pro 14 days.

- **Use gloves! Stay downwind or to the side.**
- **Watch the temperature! Between 50 and 84 degrees.**
- **Leave the paper wrapper on! <u>Kills mites in cells.</u>**
- **Can be used with honey supers on!**

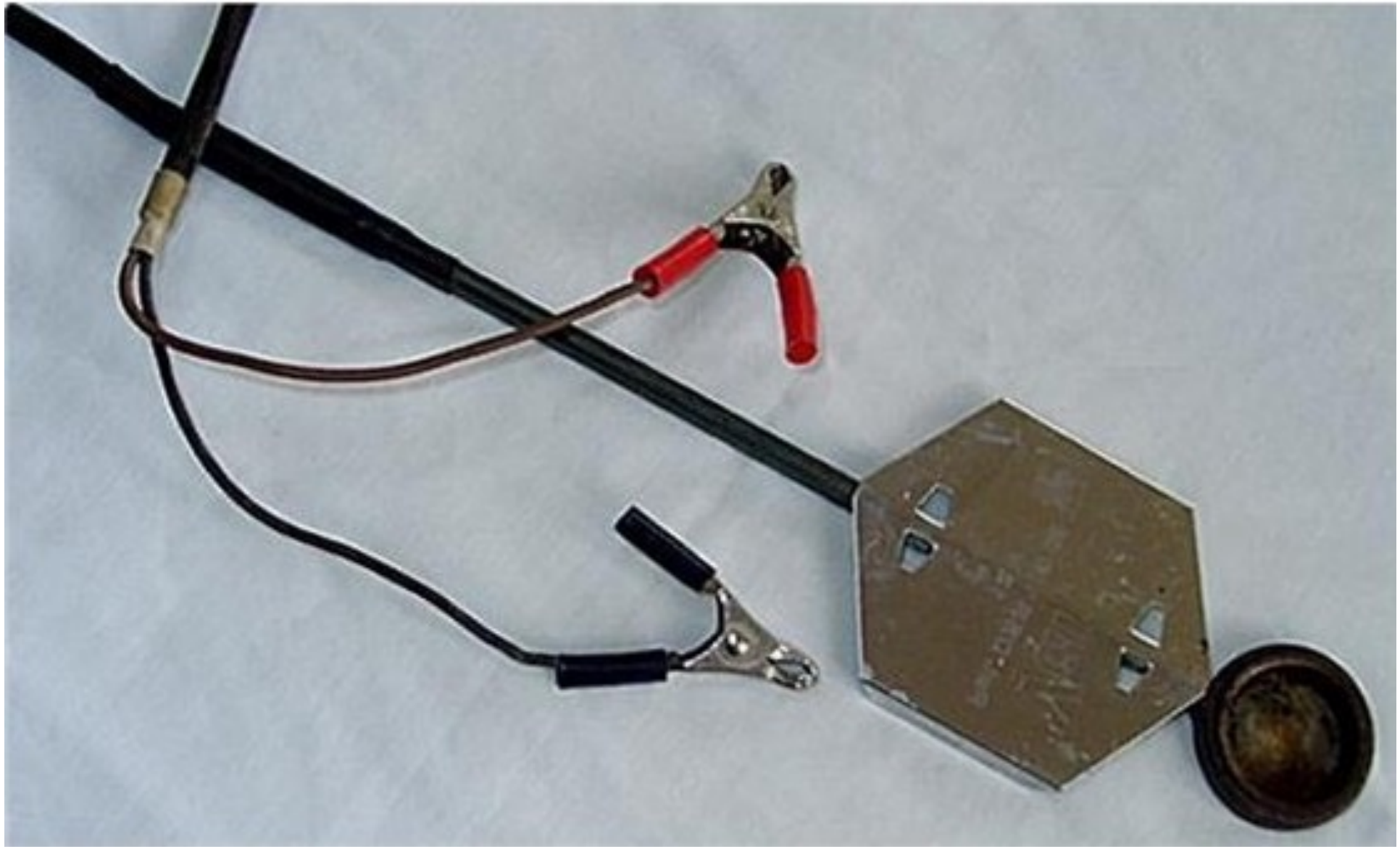
Oxalic Acid Dribble

When broodless; Do not spray but drizzle-Must be applied to bees bodies

1 TSP per seam of bees. Both boxes.

Sugar water or Glycerin.

Study: Softens exoskeleton.



Vaporization or sublimation…Rapid. About 1 minute. Battery or propane.
2-4 grams per hive. Read MDS before use. Follow directions carefully.

Keep vapor inside the hive, seal it in! 1 minute!

Wear a respirator. <u>It is dangerous!</u>

It is your decision!

Follow the research!

Protect yourself!

Scientificbeekeeping.org

Kansas State University Courses

A few other colony diseases to be aware of among many…..

Nosema…Spore… Fumigilan…Sometimes dysentery…

Deformed Wind Virus…Transmitted by Varroa

American Foulbrood….Spore…Oxytetracycline

European Foulbrood…Spore

Chalkbrood…Fungus

Our K-State courses develop these diseases and more in detail

Robbing

- Bees are opportunistic
- Especially during a drought
- Strong hive robs weaker hive
- How do I stop it?
- Keep hives balanced
- Reduce entrance when observed
- Robbing screen

A Few Creatures that Enjoy Beehives……..

Bears…Electric Fence

Skunks…Catch and release elsewhere

Mice and Shrews…Mouse Guards

Birds…In Kansas, Flycatcher

Dragon Flies…Not much one can do

Honey! And Wax, Pollen, Propolis, Venom

Maxant Plane.AVI

- Super concentrated nectar
- Harvested during the months of July, August, September
- Uncapped
- Extracted by spinning the frames in an extractor (centrifuge)
- Strained
- Packed or bottled
- Antiseptic, never spoils
- Wax
- Pollen
- Propolis
- Venom

See Honey 101

Make sure
it
is capped
Before
you take
it! 80%.

Taking it from the hive.

Brush

Blow

Bee Escape

Fume Board

Moving it

UNCAPPING

Uncapping tank

Uncapping knife

Uncapping plane

Uncapping scratcher

Maxant Plane.AVI

Video

Home processing..Sell to consumer
For Resale…Must meet FDA, KDA requirements and standards

EXTRACTING

Straining…Not filtering! No finer than 200 Microns

Warming…No warmer than 105 degrees!

STORING, LABELING, BOTTLING

5 Gal
Food
Grade

With Honeygate

3 lb, 5 lb, 32 oz, 24 oz, 16 oz, 12 oz

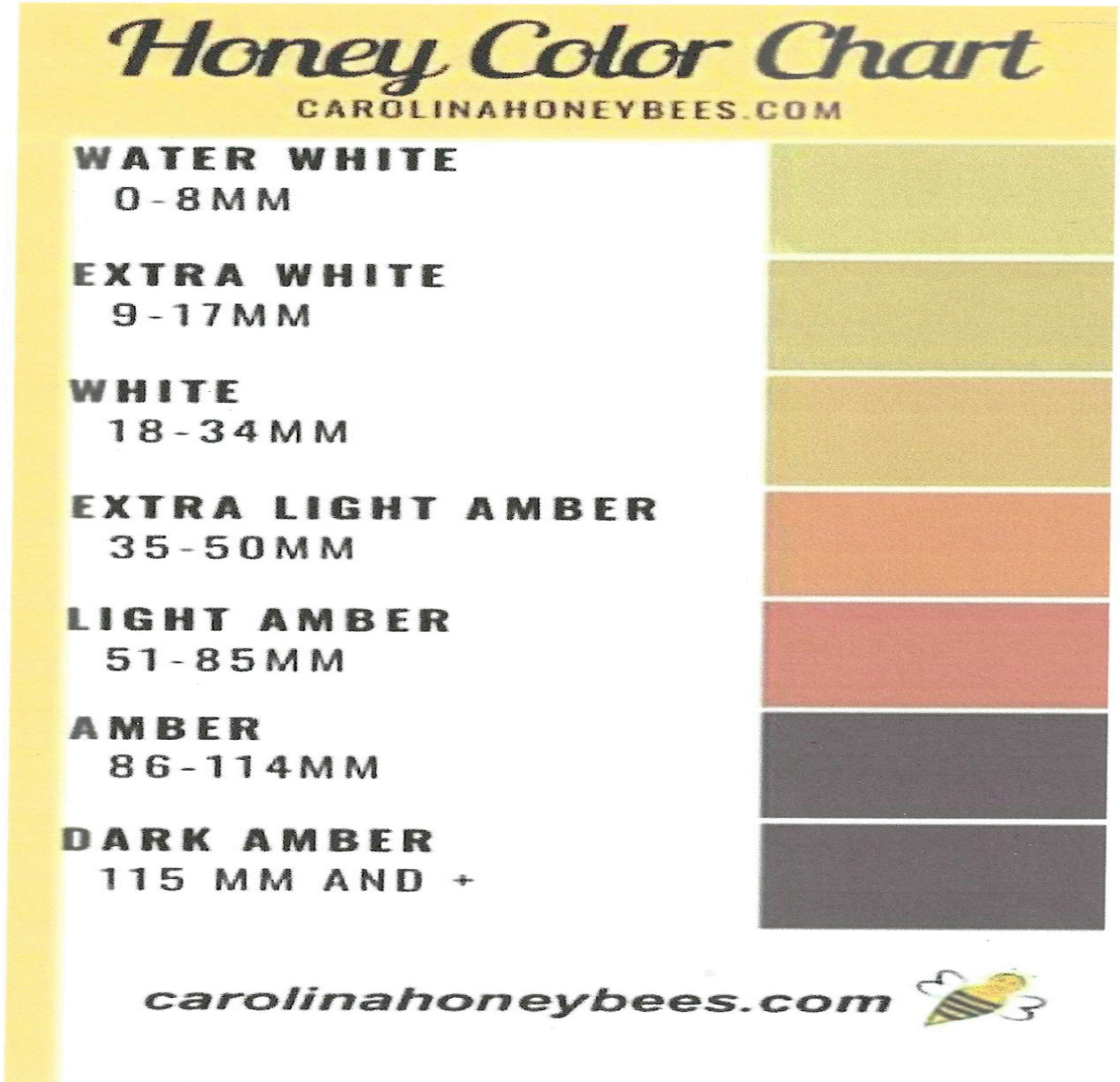
United States Standards for Grades of Extracted Honey
Agricultural Marketing Service
Effective date May 23, 1985

Types of Honey
- Liquid
- Crystallized
- Partially Crystallized

Styles
- Strained
- Filtered

Color Designations
1. Water White
2. Extra White
3. White
4. Extra Light Amber
5. Light Amber
6. Amber
7. Dark Amber

Grades
- A Score of 90
- B Score of 80
- C Score of 70
- Substandard



GENUHONEY
AUTHENTICITY CERTIFIED

Why is certification so important?

- Honey has been extracted, for the last time, stored or bottled.
- The supers have been placed back on for the bees to clean. Why? Dry wax will not absorb PDB.
- You are ready to store supers for the season and protect them from wax moths and other insects.

A walk in freezer is a luxury.

Removing the supers after the season….

Place them back on the hive to clean

Usually clean within 1 day of putting them on.

Taking them off is straightforward.

Usually not many bees on the frames.

Brush them off and cover them so that bees do not return.

Take them to the storage area: shed, garage, *NOT basement*.

Best to have an enclosed area.

Prep for stacking…..

Flat base.

Paradycloridebenzine (PDB) crystals.

<u>Do not</u> use moth balls. Napthene.

Create space between Frames 5 and 6.

Fold paper, alum foil, So that it does not fall.

6 tablespoons.

Place over 5 supers.

Airtight cover.

Stack them….

PDB above each stack of 5 supers.

Tape open seams.

In warm weather check for PDB every 2 weeks.

Add if necessary.

Freezing weather not a problem.

Air them well before supering.


Wrap them if you wish.
North of zone 6 it is
recommended.

Feed them, feed them, feed them!

The emerging workers that will become diutinus bees need to consume a large amount of pollen in order to store as much vitellogenin, lipophorin, and arylphorin* as possible in their bodies (roughly 2-3% of their dry mass).

Make sure they have sufficient stores.
Check the honey stores. 50-60 pounds.
Learn how to lift a hive to get a feel for stores.

Feed them anyway.

2 to 1 syrup. All the way to Thanksgiving.
Maybe later.

Sugar boards, fondant or purchase winter patties. Pollen substitutes later.

Mouse guards.

PROCESSING BEESWAX

- Solar Wax Melter for smaller amounts. 1 to 10 hives
- Best to use new,decapping wax

For larger quantities

- Wash in 5 gallon bucket, hot water, stir, pour out water and residue. 3 times.
- Let wax, now like oatmeal, completely dry on drop cloth.
- Heat in large container; ie Turkey Cooker. First add quart of water.
- Heat slowly to rolling boil. Screen off residue on top as it boils.
- Pour into container through screen print or sweatshirt material fleece out. Use bungee cord to keep material on container.
- Let harden. Reprocess into smaller containers for candles or other products.
- Bloom. Use hair dryer from a distance. Mold. Cannot be processed.

Classes in Candlemaking, soap making, lip balm, and more. Also volunteer opportunities.

Unique Training Program, Basic to Commercial

Small to sideliner mobile training facility.
Extraction to bottling.
3000 bottles per day.

FDA, KDA Certified. HACCP

GENUHONEY AUTHENTICITY CERTIFIED

Commercial Training Facility. Bottling (Packing) 30,000+ bottles per shift.

Local honey is very good for us!

Shari with a beautiful frame of Tuttle Creek Lake honey!

- Assists with allergies to local pollens
- Very high in antioxidants
- Antiseptic, used as a healing agent

Processed honey

- Adulterated, Combined
- Ultra strained
- Heated
- May not be honey

- USA consumes 700 million pounds year
- Produces 120 million pounds.

The old adage "know your beekeeper and honey maker" is a wise one.

Honeybees, Farming and Veterans…

- Since WWI managing honey bees has been found to have significant therapeutic value among soldiers with visible and invisible wounds.
- Relatively solitary.
- Highly focused.
- Commercial businesses needs beekeepers.
- Beekeeping provides therapy, learning, occupational opportunities.
- Objective: Help Veterans renew. Full spectrum Beekeeping and Honey Production courses.
- Full commercial operation, Apprentice to Commercial.

Join a Beeclub or Association

- Konza Beekeepers Club -In moth balls.
- NE Kansas Beekeepers Association
- Kansas Honey Producers Association
- American Honey Producers Association
- Subscribe to American Bee Journal or Bee Culture

What do I need to be doing now?

Have bees?

Build up is started
If colonies are robust invert brood boxes.
Feed pollen patties
Clean up deadouts

Start this Spring?

Bees ordered
Equipment ready
Location determined
Know how to install
Find mentor

Bee friendly plants in our area

Trees and Shrubs

American Elm, Lacebark Elm, Redbud, Golden Rain, Black Locust, Honey Locust, Hackberry, Maple, Mulberry, Walnut, Persimmon, All fruit and nut trees including ornamental, Blackberry, Burning Bush, Buckeye, Chokeberry, Catalpa, Button Bush, Hawthorn, Honeysuckle, Holly, Tulip Tree, Wild Plum, Buckthorn, Sumac, Raspberry, Willow, Bee Bee Tree, Basswood, Blueberry, Black Haw

Flowers, Herbs, and Grasses

All Wild Flowers, ***Clover (Yellow Sweet, White Sweet, White Dutch) and Alfalfa***, Dandelion, Russian Sage, Catmint, Lavender, Sunflower, Rose, Geranium, Sedum, Hyssop, Bugle, Chives, Garlic, Leadwort, Milkweed, Butterfly Weed, Asparagus, Milk Vetch, Aster, Borage, Mustard, Oilseed Rape, Marigold, Thistle, Clematis, Cucumber, Melons, Pumpkin, Wild Carrot, Leopardsbane, Candytuff, Fireweed, Heather, Joe-Pye Weed, Buckwheat, Blue Vine, Sunflower, Basil, Henbit, Lavender, Trefoil, Lemon Balm, Peppermint, Catnip, Oregano, Poppy, Tansy, Smartweed, Lungwort, Azalea, Sedum, Goldenrod, Chickweed, Thyme, Vervain, Iron Weed, Common Vetch, Calliopsis, Zinnias, Buttercups, Cosmos, Crocus, Dahlia, Echinacea (Cone Flower), English Ivy, Foxglove, Hollyhock, Hyacinth, Onion, Watermelon, Squash, Strawberry, Bee Balm, Sage

Crops

Alfalfa, Soybean, Sunflower, Clover, Buckwheat, Sweet Corn, Milo, Sorghum, Hay grasses and flowers, fruits, nuts and vegetables.

So, they are not "JUST a bee!"

- Critical part of our agricultural system
- Bring us beauty in our environment
- Provide great tasting, beneficial honey

Without bees our diet would be bland and our environment dull.

What can you do to help us save our bees?

1. Be very careful with pesticides and herbicides even on the flowers in your garden or on your lawn. If you must use them, apply them late in the evening when the bees are back in the hive.
2. Plant bee friendly flowers, shrubs and trees.
3. Regularly use local honey. It's best for you.
4. Place a hive on your property; or allow a beekeeper to do so.
5. Simply understand their importance to us and take every action to care for the environment in which they, and we, must live.


www.valorhoney.org
K-STATE
VALOR HONEY
BUY HONEY, SAVE A LIFE ★ VALORHONEY.ORG
ON BEHALF OF OUR VETERANS,
THANK YOU

"So work the honey bees. Creatures that, by a rule in Nature, teach the art of order to a peopled kingdom."
Shakespeare