Beginning Beekeeping…

A Honey of a Hobby…or Business!

2016 Beginning Farmer Veteran Workshop

Saturday, July 30, 2016

Roy Ballard
Purdue Cooperative Extension Service
Hancock County Office
802 North Apple Street
Greenfield, Indiana 46140
317-462-1113
317-462-2424 FAX
rballard@purdue.edu

PURDUE EXTENSION
Making a Difference

NORTH CENTRAL SARE
Sustainable Agriculture Research & Education

Before we begin…
a few quick “commercials”…

2016 Indiana Local Food Summit

Thursday 6 October 2016

9:00 am – 4:30 pm

Indianapolis

Networking, Learning and Local Food Lunch
Catered by Ivy Tech Culinary Students

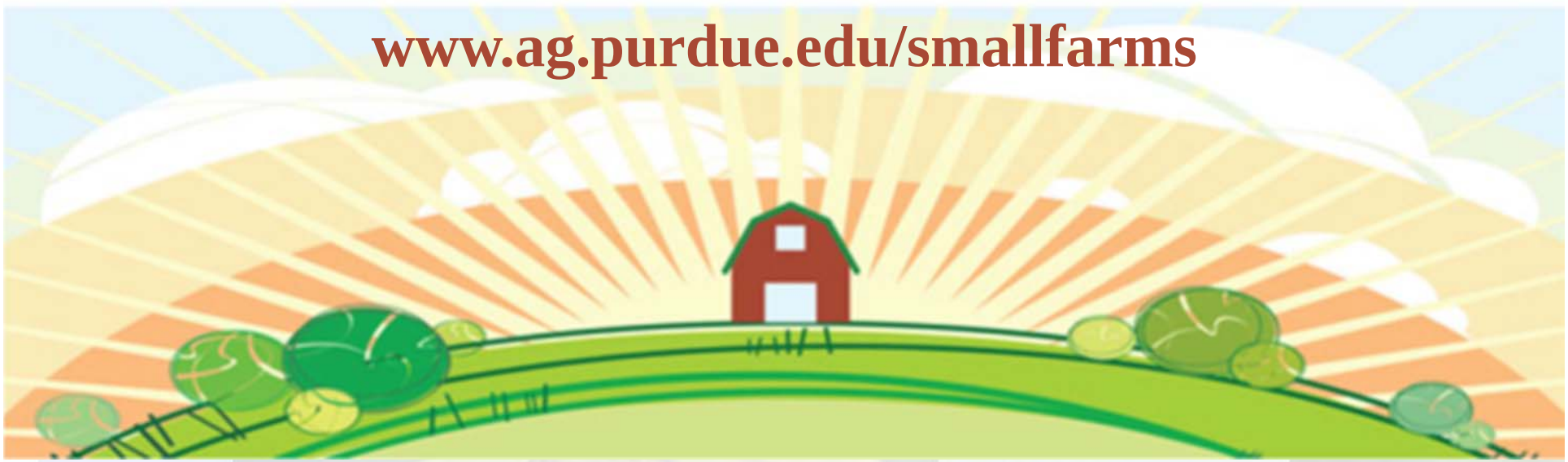
*Join us for a **morning** of focused networking for food councils, farm to school, food hubs, healthy food access and food business training*

*Stay for lunch and attend **afternoon sessions** on 'Getting Started in Farm to School,' Cooperative Business Models, Creative purchasing of local food for institutions and restaurants and more!*

MARCH 2-4, 2017
Danville, Indiana

INDIANA
Small Farm
Conference

www.ag.purdue.edu/smallfarms



Indiana Pasture Poultry Initiative

rballard@purdue.edu

Purdue Extension

The Indiana Poultry Branding Project

An economic/enterprise development initiative

Are you a farmer in South East or East Central Indiana?
Are you interested in learning more about modern poultry production?
Are you interested in working with others toward the development of a recognized and valued poultry brand?
Then this may be an opportunity for you!

The details of this project are far from complete…
At this time we are trying to identify current or prospective producers of eggs and/ or broilers who are interested in taking their production to the next level.
This is NOT a get rich scheme and there are no guarantees but what we can tell you is that this is an effort to enhance the marketability of your good poultry products in the long term….No quick fixes here!!!

This is an outreach/ education/ market enhancement project of Purdue Extension and Ivy Tech Community College in cooperation with the Hoosier Harvest Market (www.hoosierharvestmarket.com) working with a USDA Value Added Producer grant.
We are seeking a few farmers who wish to learn more about improving the consumer recognition of their poultry products… there is no commitment at this time.

For additional information please contact :
Roy Ballard-Purdue Extension Educator, ANR, Hancock County
rballard@purdue.edu-317-462-1113
Michael O'Donnell-Purdue Extension Educator, ANR, Delaware County
modonnel@purdue.edu 765-747-7732


Instant shopper access to expert reviewed information on over 40 Indiana fruits and vegetables at the point of purchase!!!
Introducing…
FoodLink℠
FoodLink
Making Fresh Foods Decisions Fast and Recipes with Flavor
Coming to a Grocery Store or Farmers' Market Near You in SUMMER 2016!!!!
www.purdue.edu/FoodLink
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LOCAL FACES COUNTLESS CONNECTIONS

Interested in Grants or Educational Resources about Sustainable Agriculture???

25 Years of SARE
NORTH CENTRAL SARE
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http://www.northcentralsare.org/

or see Roy Ballard rballard@purdue.edu

MY THANKS!!!!!

My sincere thanks to:

Phil Craft, State Apiarist (retired)

Kentucky Department of Agriculture

Thomas Webster, PhD, State Specialist

Kentucky State University

…for their help in the development of this presentation

There are no easy answers… Just lots of good questions that need to be asked!

February 24, 2014

"Honey bee pollination supports an estimated $15 billion worth of agricultural production, including more than 130 fruits and vegetables that are the foundation of a nutritious diet. The future security of America's food supply depends on healthy honey bees," **said Agriculture Secretary Tom Vilsack.** ***"Expanded support for research, combined with USDA's other efforts to improve honey bee health, should help America's beekeepers combat the current, unprecedented loss of honey bee hives each year."***

First…A Little Honeybee Trivia…

- **How many flowers must a honeybee tap to make a pound of honey?**

2 million

- **How far will a bee fly in search of forage (nectar/pollen)?**

up to 3 miles

- **How fast does a honeybee fly?**

approximately 15 miles per hour

- ***How long have bees been producing honey from flowering plants?***

10-20 million years

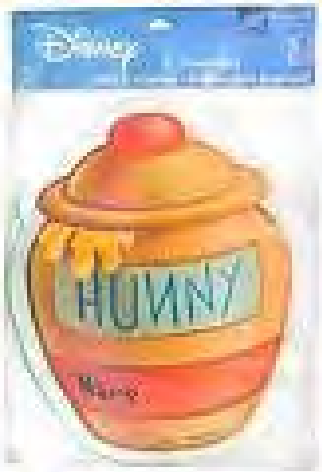
- **How many flowers does a honeybee visit during one collection trip?**

50-100

When You Think Of Bees, You Think Of Honey!

Why do we "keep" bees? Let's Ask the Expert!!!

"The only reason for being a bee that I know of is making honey… and the only reason for making honey is so I can eat it."



-Winnie the Pooh…House at Pooh Corner by A. A. Milne

For Honey Production You Need… *Bees!*

LOTS OF BEES!

But There Are More Marketable Products From Bees NOT *Just* Honey!

And *Biscuits*!

But There Are More Marketable Products From Bees NOT *Just* Honey!

Beeswax

Candles

And other

beeswax products

But There Are More Marketable Products From Bees NOT *Just* Honey!

Bee Pollen

But There Are More Marketable Products From Bees NOT *Just* Honey!

Propolis

But There Are More Marketable Products From Bees NOT *Just* Honey!

Royal Jelly

Other Ways To Make Your Bees Work For You *For a Profit*!

Selling Bees

Nucleus Hives (Nucs)

Other Ways To Make Your Bees Work For You *For a Profit*!

Selling Queens

Other Ways To Make Your Bees Work For You *For a Profit*!

Pollination Services

Pumpkins and squash…a case for insect pollination

Flowers to Attract Honey Bees

- Asters
- Goldenrod
- Milkweed
- Sages
- Sumac
- Thistle
- Tulip trees
- Locust trees
- Wild thyme
- Clovers
- Alfalfa
- Buckwheat
- Dandelion
- Many others

Honey plant	February	March	April	May	June	July	Aug.	Sept.	Oct.
Alfalfa		X	X	X	X				
Aster						X	X	X	X
Basswood				X	X				
Birdsfoot Trefoil			X	X	X	X	X	X	X
Brambles				X	X				
Brassicas				X	X				
Buckthorn			X	X	X				
Clover				X	X				
Cotton						X	X	X	
Cucurbits					X	X	X		
Dandelion		X	X	X					
Elm		X	X						
Fruit trees			X	X					
Goldenrod						X	X	X	X
Hawthorn			X	X					
Honeysuckle			X	X	X	X			
Locust				X	X				
Maple	X	X	X						
Milkweed				X	X	X	X		
Persimmon				X					
Poplar		X	X						
Privet				X	X				
Redbud			X						
Soybean						X	X	X	
Sumac		X	X	X	X	X			
Sunflower					X	X	X		
Tulip poplar				X	X				
Vetch				X	X				
Willow	X	X	X	X	X				

Beekeeping – the KEY!

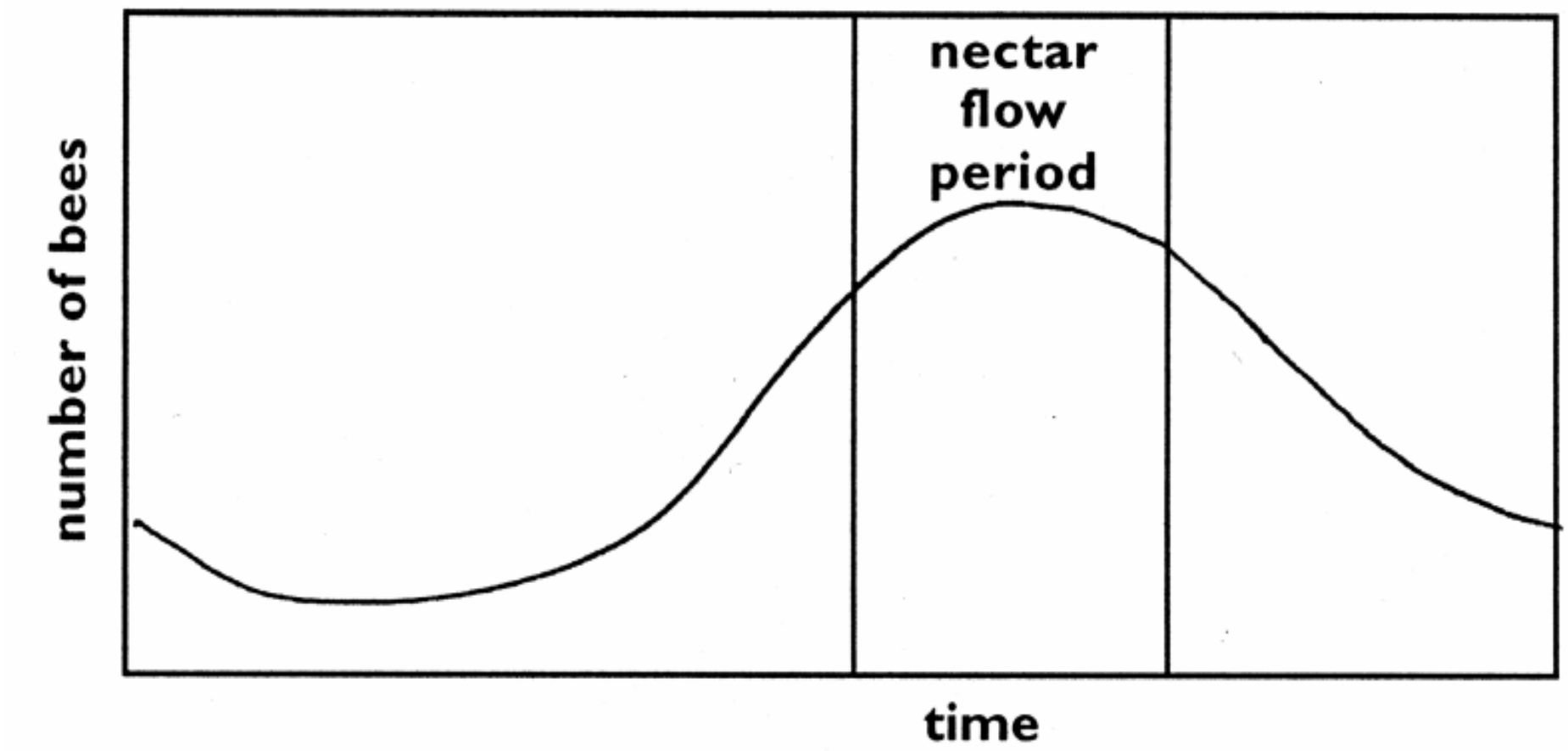
Manage colonies

intensively

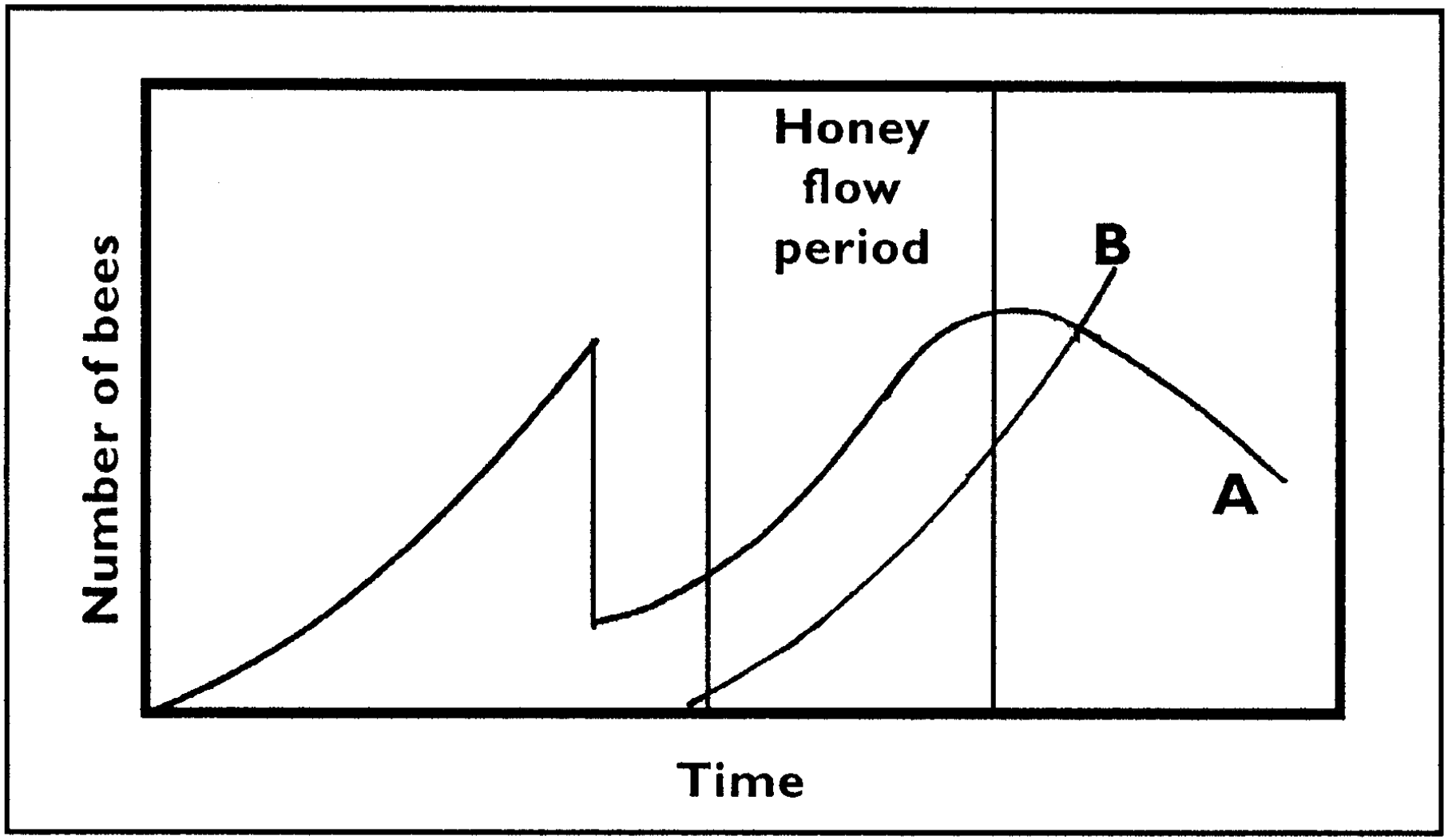
or

extensively

Beekeeping – TIMING…the real KEY to success!



Beekeeping – TIMING…the real KEY to success!



Castes of Bees

There Are Three Different Castes Of Honeybees in a Colony.

- Workers
- Drones
- Queens

Workers

Most Bees In A Colony Are Workers. Females Who Do All The Work In A Hive, Including Forging.

This Is Typically The Only Honeybee A Non Beekeepers Ever Sees.

Workers (immature females)

- Worker bees do all the different tasks needed to maintain and operate the hive. They make up the vast majority of the hive's occupants and they are all sterile females.
- When young, they are called house bees and work in the hive doing comb construction, brood rearing, tending the queen and drones, cleaning, temperature regulation and defending the hive.
- Older workers are called field bees. They forage outside the hive to gather nectar, pollen, water and certain sticky plant resins used in hive construction.

- **Workers born early in the season will live about 6 weeks while those born in the fall will live until the following spring.**

- **Workers are about 12 mm long and highly specialized for what they do, with a structure called a pollen basket (or corbiculum) on each hind leg, an extra stomach for storing and transporting nectar or honey and four pairs of special glands that secrete beeswax on the underside of their abdomen.**

- **They have a straight, barbed stinger which can only be used once. It rips out of their abdomen after use, which kills the bee.**

Drones

Male Bees or Drones Only Role Is To Mate With The Queen. They Do No Other Work And Their Numbers Are Controlled By The Workers.

Notice The Large Eyes On This Drone, “The Better To See Her With!”

Drone (male)

- Drones, since they are males, have no stinger. They live about eight weeks.
- Only a few hundred - at most - are ever present in the hive. Their sole function is to mate with a new queen, if one is produced in a given year.
- A drone's eyes are noticeably bigger than those of the other castes. This helps them to spot the queens when they are on their nuptial flight.
- Any drones left at the end of the season are considered non-essential and will be driven out of the hive to die.

Queens

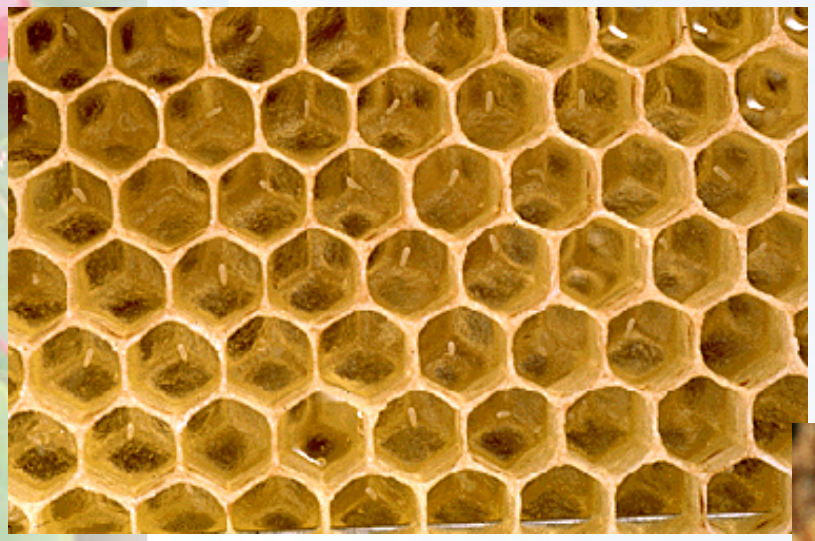
Queens Are Highly Modified Workers.

Normally There Is Only One Queen At A Time In A Colony And She Is The Only Egg Laying Female In A Healthy Colony.

Queen (mature female)

- There is only one queen in a hive and her main purpose in life is to make more bees.
- She can lay over 1,500 eggs per day and will live two to eight years.
- She is larger (up to 20mm) and has a longer abdomen than the workers or drones.
- She has chewing mouthparts.
- Her stinger is curved with no barbs on it and she can use it many times.

It All Starts With Eggs!

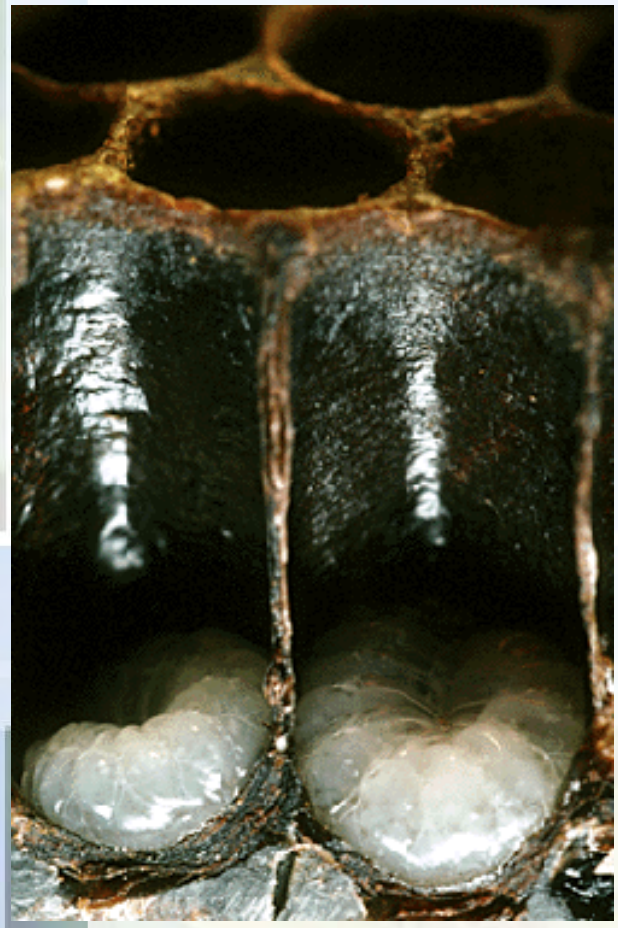


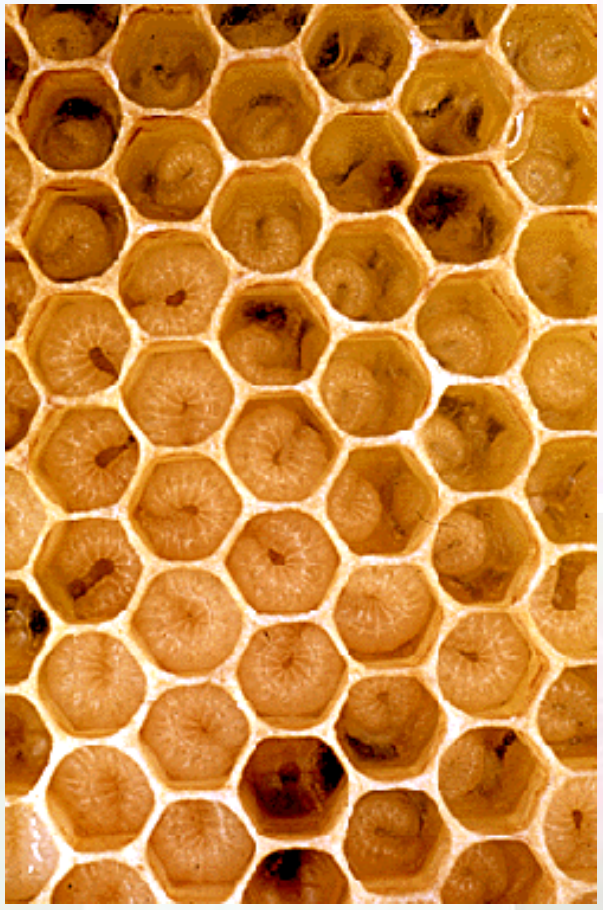
Queen Laying Eggs

A Queen Is Truly An Egg Laying Machine!

1000 To 2000 Per Day.

Eggs Develop Into Larvae





Larvae Then Pupate

Beekeepers Often Call Pupae Capped Brood. This Is The Cocoon Stage Of Insects.

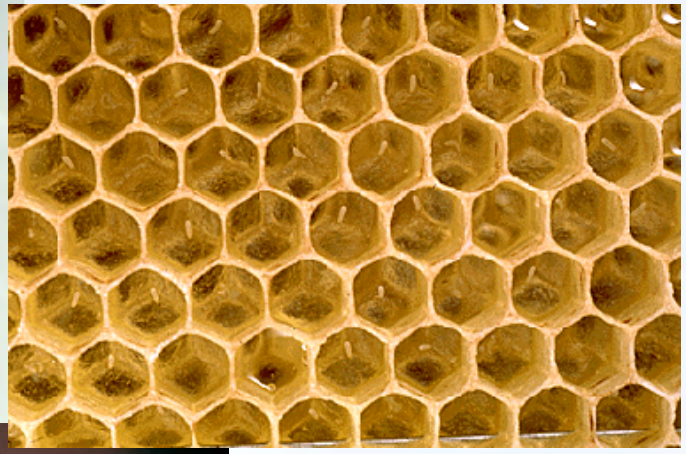
Finally Bees Emerge…

Worker Emerges about 21 Days After Egg Is Laid (Seen Here). Drones Emerge About 24 Days After Egg Is Laid.

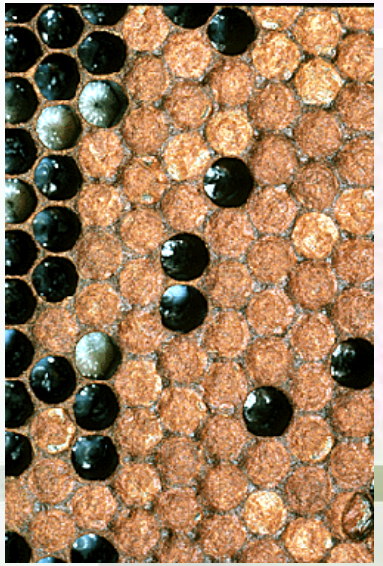
Queens Are A Little Different

This Emerging Queen Started Out As An Ordinary Worker Egg. Workers Then Enlarged Her Cell (Now A Queen Cell) And Fed Her A Special Diet (Royal Jelly).

What Will You See When You Open Your New Hives?



- Eggs
- Larvae
- Capped Brood
- The queen
- Honey
- Pollen



A Wild Colony

A Wild Honeybee Colony And A Colony Kept By A Beekeeper Differ Mainly In Where & How The Colony Is Housed.

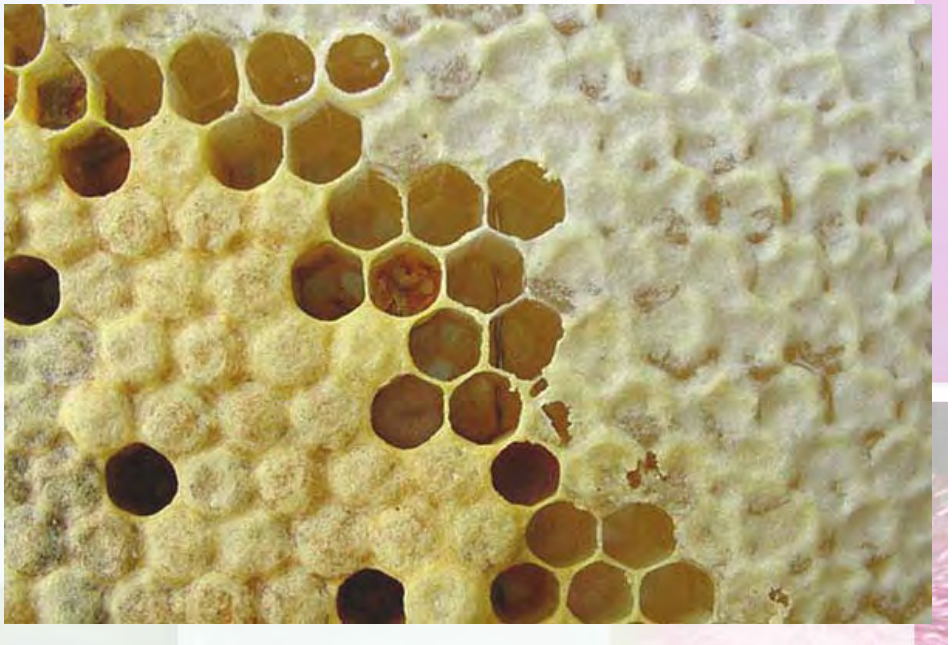
This Colony Is Outside And Exposed. Normally A Wild Colony Will Establish Itself Inside A Tree Or Structure, Sometimes a Manmade Structure.

Wax Comb

Basic Building Block Of A Hive!

Honey Comb

- This marvel of insect engineering consists of flat vertical panels of six-sided cells made of beeswax.
- Beeswax is produced from glands on the underside of the abdomens of worker bees.
- House bees take the beeswax and form it with their mouths into the honeycomb. The cells within the comb will be used to raise young and to store honey and pollen.



The Hive And The Honeybee

The Basis Unit of A Community Of Bees Are Called A Colony. Beekeepers Provide A Hive To House A Colony. Beekeepers Will Often Use The Term **Hive** And **Colony** Interchangeably.

This Is A Collection Of Historic Hives.

Beekeeping History

Revolutionary war-era beekeeping – 2 gums & 2 skeps

Skep beekeeping

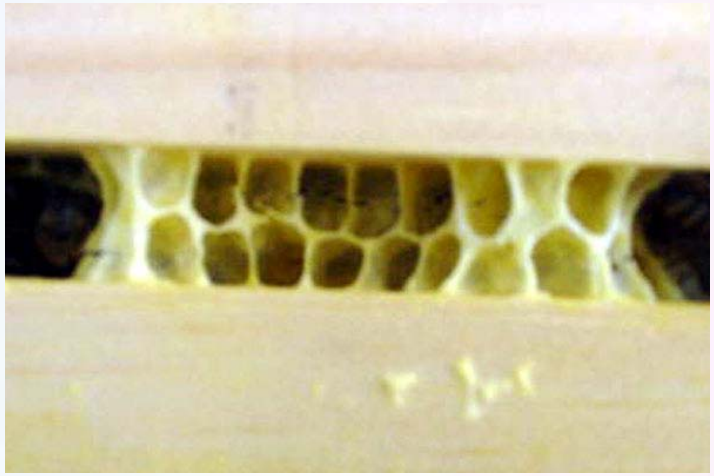
Beekeeping History

- Human as Beekeeper

Rev L.L. Langstroth

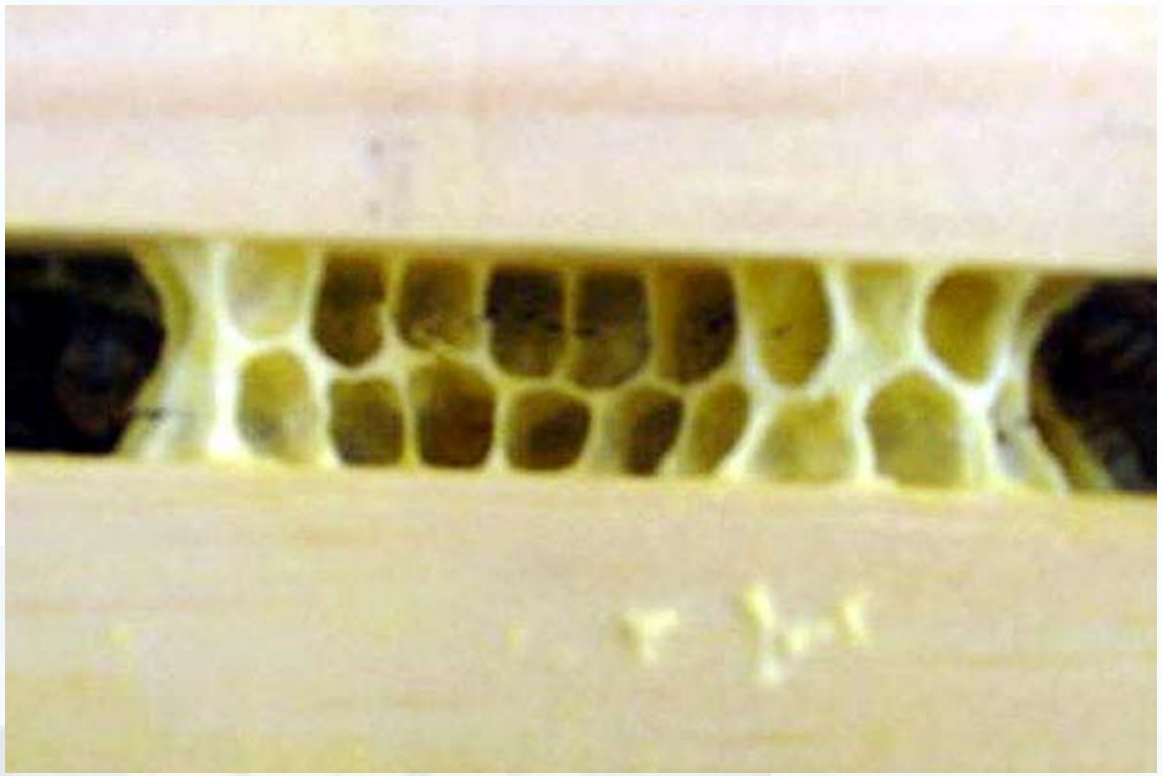
Comb In Frame

Beekeepers Control The Way Bee Build Comb By Providing Movable Frames in Hives.



By Providing A Minimum Space For Bees To Travel Between Frames… Called “*Bee Space*”, Beekeepers Prevent Bees From Building Solid Mass Of Comb In Hive.

Bee Space



Between 1/4 and 3/8 of an inch…

The most important discovery in beekeeping history!

More Beekeeping Basics

Notice Natural Bee Space In this Wild Colony.

Movable Frames

Movable Frames Allow Beekeepers To Open Up And Take Hives Apart For Inspection and even exchange frame parts.

Brood Chambers

Hive Bodies Or Supers Placed On Bottom Of The Hive Are Area Where Queen Lays Eggs & Brood Develops.

Beekeeping Honey Basics

Honey Storage

Bees Tend To Store Excess Honey Above Brood Area.

Beekeepers Provide (Normally Smaller) Frames And Supers Above Brood Frames And Chambers To Store Honey Crop.

Beekeeping Honey Basics

Honey Supers

Sometimes Lots Of Honey Supers!

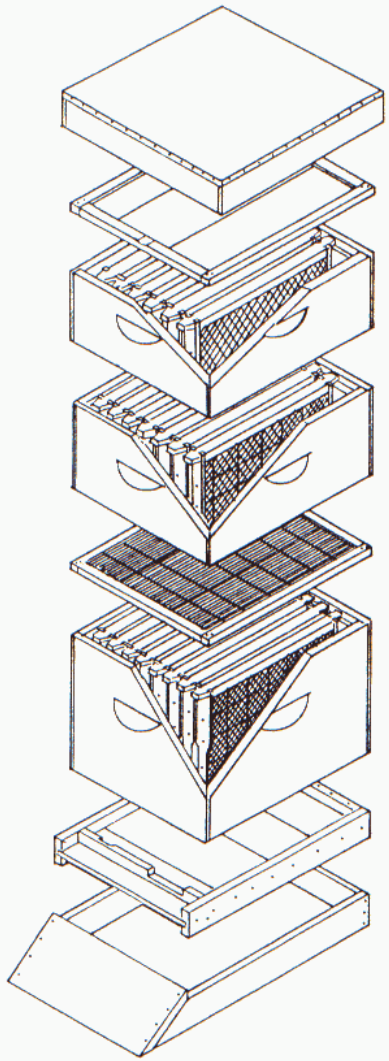
Now How Do I Get Started With Bees?

Getting Started With Bees!

Equipment

- Wood Equipment
- Other Equipment

Getting Started With Bees!



Wood Equipment

- Used Wood Equipment
- New Wood Equipment

Buying Wood Equipment

Used

- **Advantages**
  - Cheaper
  - No Assembly Required
- **Disadvantages**
  - *Disease Introduction!!!*
  - Most of the time have to clean, repair, and paint.

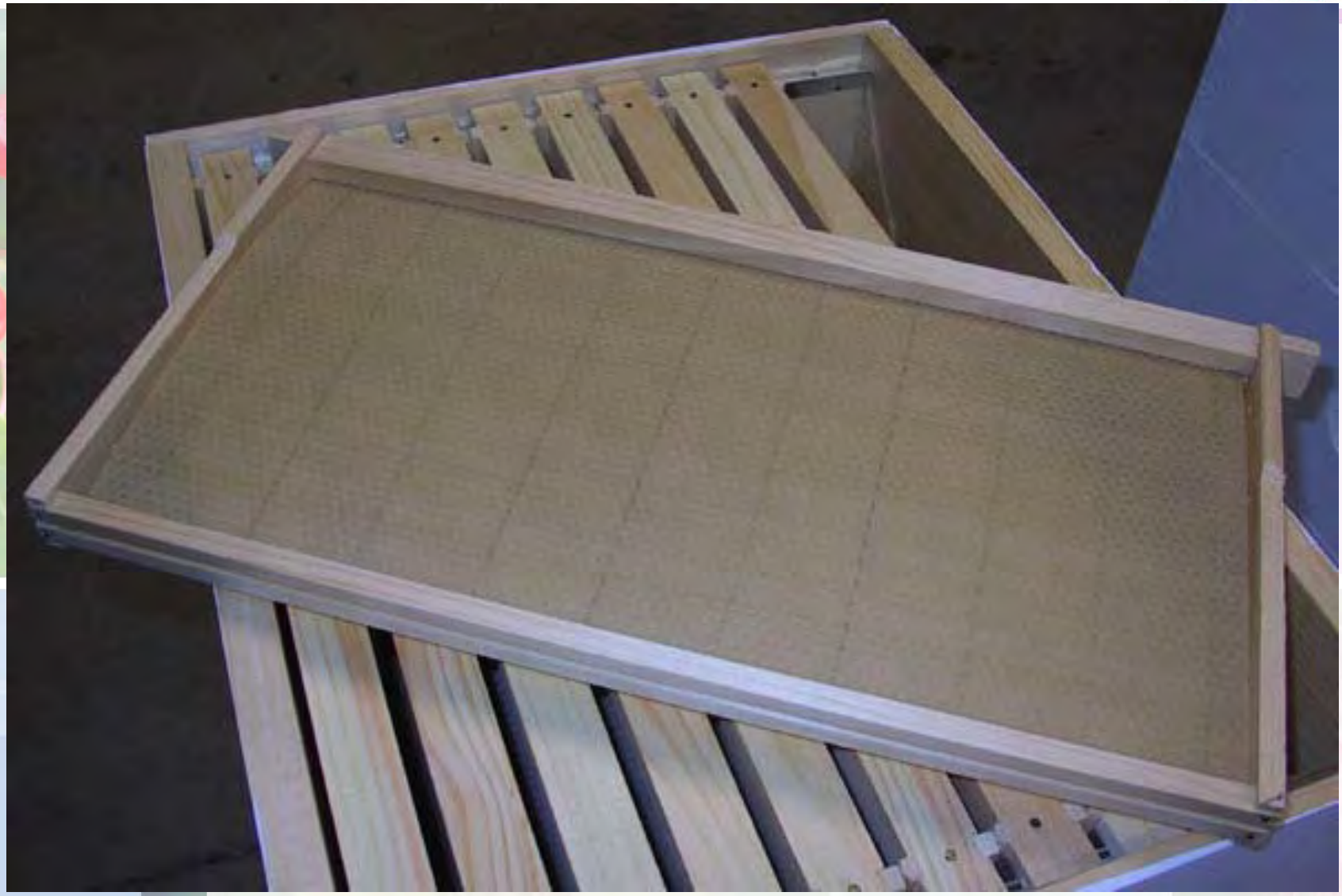
You Get What You Pay For …and you may get more than you bargained for…

Buying Wood Equipment

New

- **Advantages**
  - Disease Free
  - New Condition
- **Disadvantages**
  - More Costly
  - Assembly & Painting Required
    - For Wood Components


Sports



Getting Started With Bees!

Equipment

(Non Wood)

- Smokers
- Hive tools
- Coveralls & Veils
- Extraction Equipment

This Equipment Is Often A Good Value Used And Chance Of Disease Spread Reduced

Essential Equipment

Essential Equipment

Buying Bees

Sources Of Bees

- Catching Swarms
- Buy Existing Hives
- Buy Nucs
- Packages

Sources Of Bees

Catching Swarms

- **Advantages**
  - Bees Free
- **Disadvantages**
  - Source of Diseases and Pests
  - Genetics Unknown
- ***Bottom Line: Due To Mite Situation, Not A Lot Of Swarms Available.***

Sources Of Bees

Buy Existing Hives

- **Advantages**
  - Can Be Economical
  - Honey First Year
  - Splits Possible First Year
  - Disease & Pest Treatments May Already Be Done First Year
- **Disadvantages**
  - Source of Diseases and Pests
  - May Get Poor Equip. With Bees

Credible Suppliers of Bees

A few suppliers

MANN LAKE
WE KNOW BEES
AN EMPLOYEE OWNED COMPANY

BRUSHY MOUNTAIN
1-800-BEESWAX

Dadant

Kelley Beekeeping
SERVING THE BEEKEEPER SINCE 1924

Sources Of Bees

Buying Nucs

- **Advantages**
  - Economical
  - Size Small At First
- **Disadvantages**
  - Source of Diseases and Pests
  - May Get Poor Equip. With Bees
  - Genetics May Be Unknown
  - Minimal Honey First Year

Sources Of Bees

Buying Packages

- **Advantages**
  - Size Small At First
  - Health and Pest Problems Should Be Reduced
  - Young Queen
- **Disadvantages**
  - Most Costly
  - Minimal Honey First Year


1

More Help For Beekeepers… Beginners and Experienced

- Your State Apiarist Or Apiary Inspector
- State Beekeeping Association
- Local Beekeeping Associations
- Apiculture Extension Specialists
- Local ExtensionEducators

Beekeepers of Indiana

http://www.indianabeekeeper.com/home

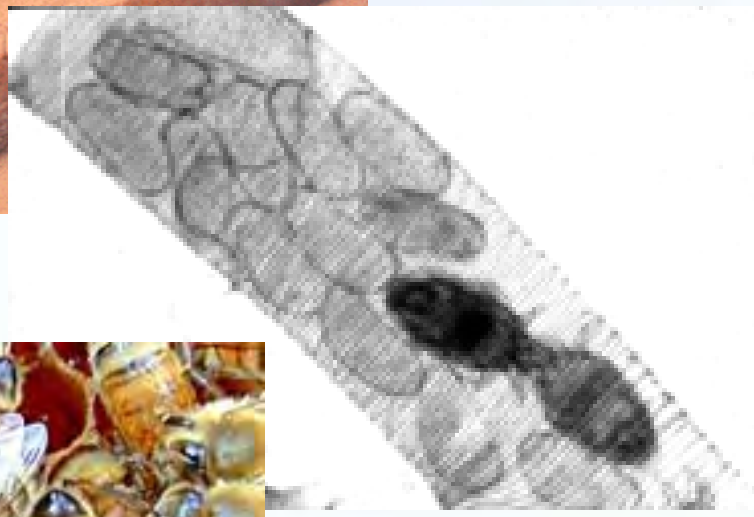
Indiana Bee School XIV

The Beekeepers' of Indiana will hold its Indiana Bee School XV in Indianapolis, Indiana on **Saturday, February 25, 2017** at Decatur Central High School, 5251 Kentucky Avenue, Indianapolis, Indiana 46221 it's easily accessible from I-465 loop.

Challenges to Beekeeping

- Parasites
- Diseases
- Pests
- Swarming
- Colony Collapse Disorder
- Hive Management

Challenges to Beekeeping



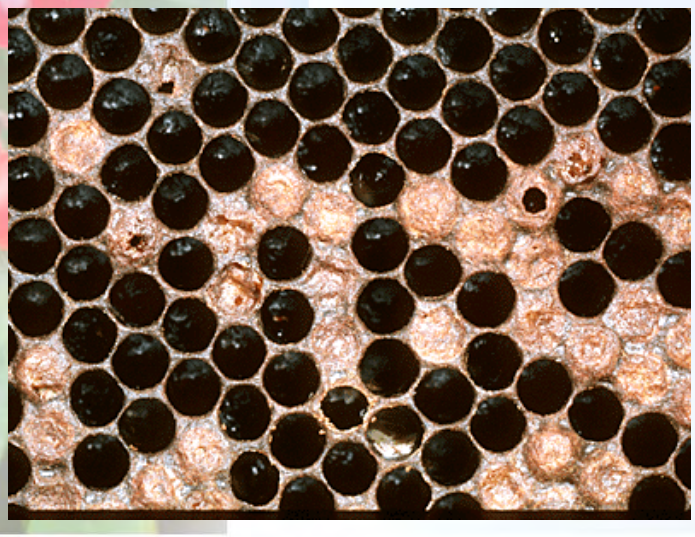
Parasites

- Mites
  - Varroa mites
  - Tracheal mites

Small Hive Beetles

Wax moths

Challenges to Beekeeping



Honeybee Diseases

- Nosema disease
- American Foulbrood
- Caulkbrood
- Viruses

Challenges to Beekeeping

Pests

- Skunks
- Bears
- Others

Challenges to Beekeeping

Swarming

Challenges to Beekeeping

Colony Collapse Disorder

April 12, 2016

Pesticide drift publication now available from Purdue Extension

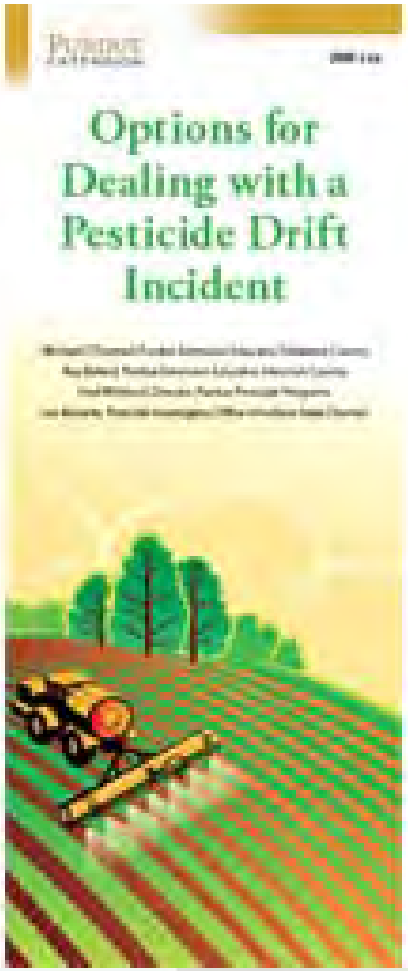
WEST LAFAYETTE, Ind. - A new **Purdue Extension** publication examines the causes and effects of pesticide drift, including information on how to recognize and report a drift incident.

Pesticide drift occurs when chemicals used to manage weeds or insects are blown or carried off target by wind during application, posing a potential risk to people, animals and plants on neighboring properties.

Pesticide drift can happen in both residential and agricultural settings and under all types of weather conditions, even if wind speeds are low, said **Fred Whitford**, director of the **Purdue Pesticide Programs** and one of the authors of ***Options for Dealing with a Pesticide Drift Incident***.

"Whether it's a next-door neighbor or a farmer who owns the field adjacent to your property, they have the legal right to apply pesticides to their property," Whitford said. "However, pesticide applicators also have the legal obligation to keep those products on their side of the property line."

According to the publication, some crop damage attributed to drift might be the result of other factors, such as insect infestations, plant diseases or weather conditions. The authors say it is important to find out what actually caused the damage before reporting a possible drift incident.

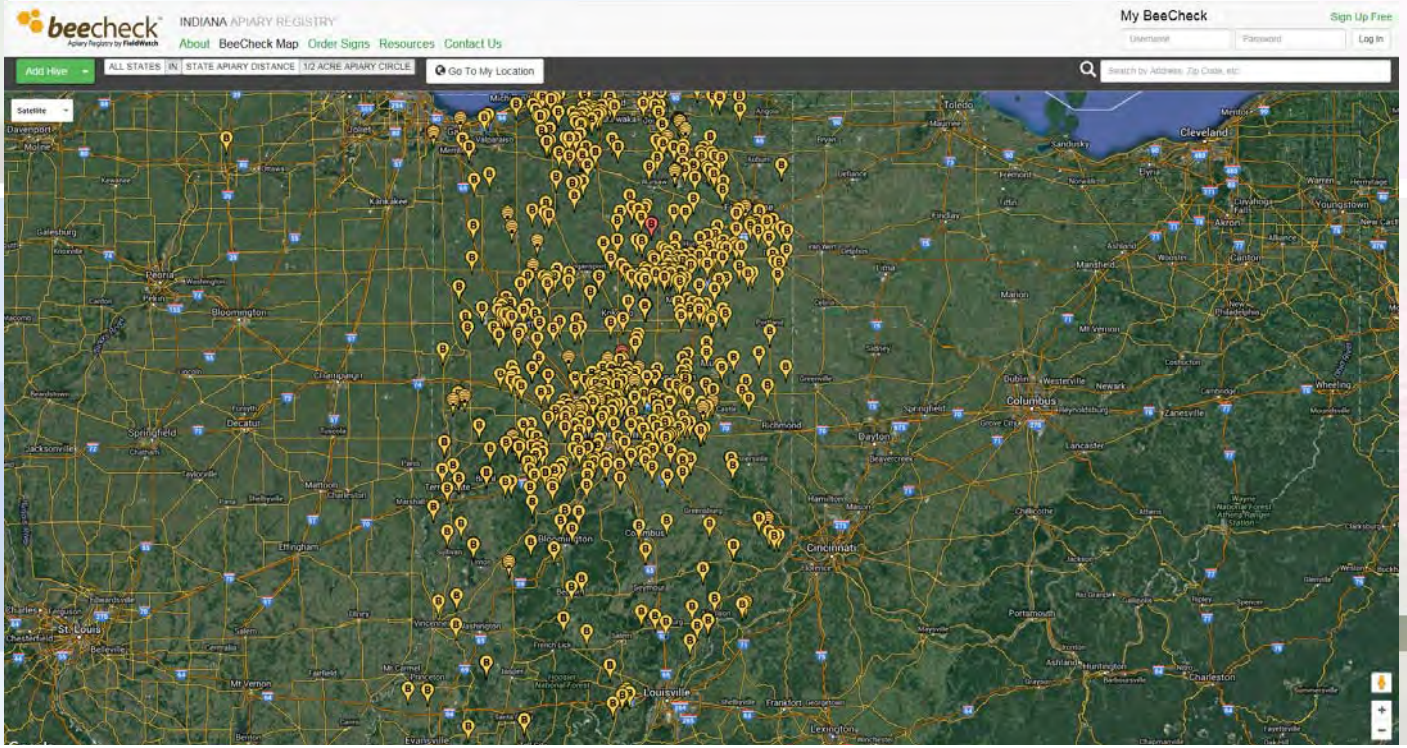


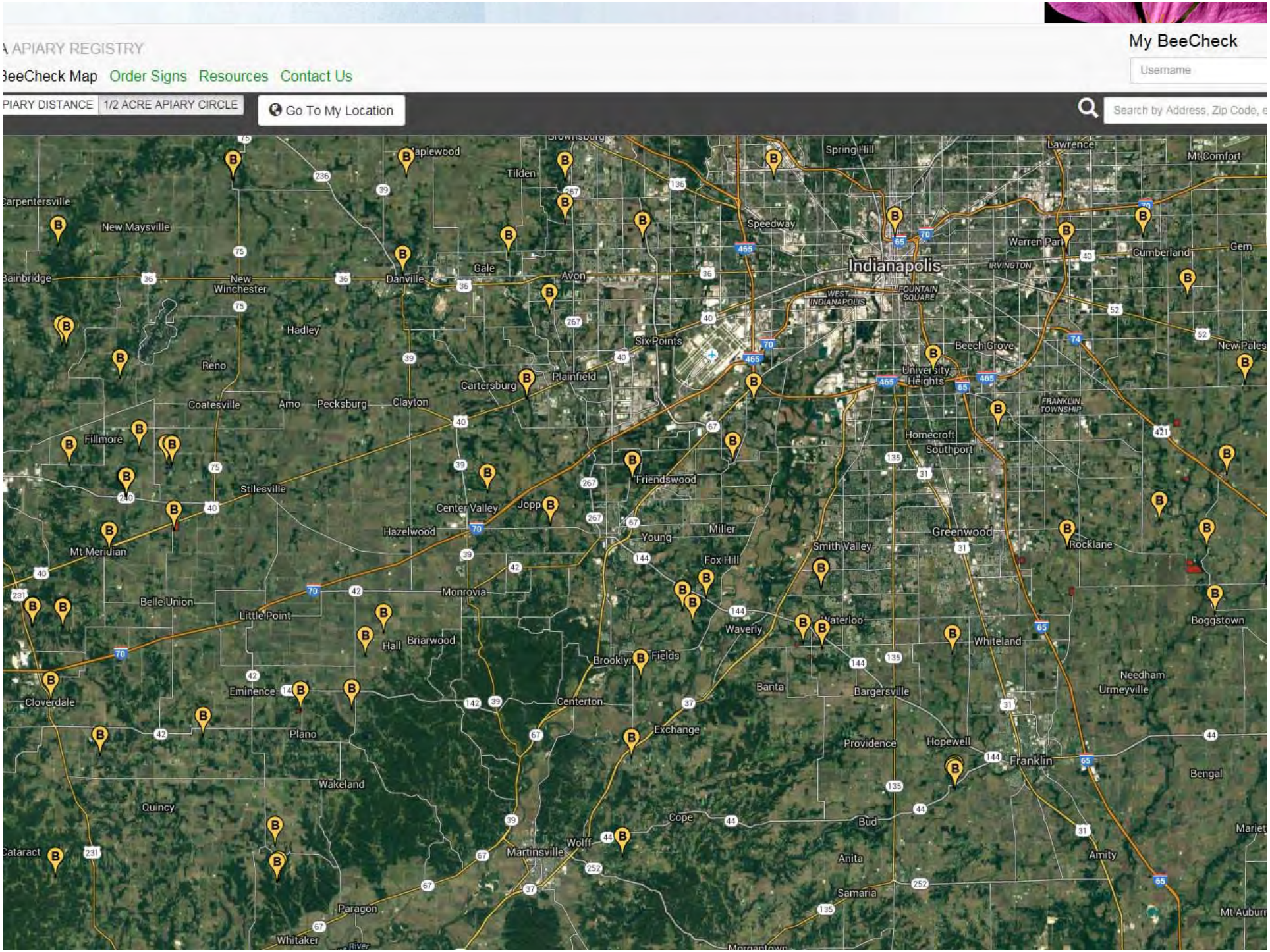
Bee a good Neighbor!

Do Your Part!

Register your bee yard on Fieldwatch/BeeCheck!

https://beecheck.org/signup#beekeeper




A APIARY REGISTRY
BeeCheck Map
Order Signs
Resources
Contact Us
My BeeCheck
Username
PIARY DISTANCE
1/2 ACRE APIARY CIRCLE
Go To My Location
Search by Address, Zip Code, e
Indianapolis
Carpentersville
New Maysville
Bainbridge
New Winchester
Danville
Gale
Avon
Tilden
Speedway
Spring Hill
Lawrence
Mt Comfort
Warren Park
Cumberland
Gem
IRVINGTON
WEST INDIANAPOLIS
FOUNTAIN SQUARE
Hadley
Reno
Six Points
Beech Grove
New Pales
Cartersburg
Plainfield
University Heights
FRANKLIN TOWNSHIP
Coatesville
Amo
Pecksburg
Clayton
Homecroft
Southport
Fillmore
Friendswood
Stilesville
Center Valley
Jopp
Hazelwood
Young
Miller
Smith Valley
Greenwood
Rocklane
Mt Meridian
Fox Hill
Monrovia
Belle Union
Little Point
Waterloo
Waverly
Boggstown
Hall
Briarwood
Brooklyn
Fields
Whiteland
Cloverdale
Eminence
Centerton
Banta
Bargersville
Needham
Urmeyville
Plano
Exchange
Providence
Hopewell
Franklin
Bengal
Wakeland
Quincy
Cope
Bud
Wolff
Martinsville
Anita
Amity
Cataract
Samaria
Paragon
Whitaker
Mt Auburn

Morning Ag Clips Indiana Edition for June 1, 2016

Honeybees pick up pesticides via non-crop plants

WEST LAFAYETTE, Ind. — A Purdue University study shows that honeybees collect the vast majority of their pollen from plants other than crops, even in areas dominated by corn and soybeans, and that pollen is consistently contaminated with a host of agricultural and urban pesticides throughout the growing season. Christian Krupke, professor of entomology, and then-postdoctoral researcher Elizabeth Long collected...

Read More

NATURE COMMUNICATIONS | ARTICLE OPEN

Non-cultivated plants present a season-long route of pesticide exposure for honey bees

Elizabeth Y. Long & Christian H. Krupke

Affiliations | Contributions | Corresponding author

Nature Communications **7**, Article number: 11629 | doi:10.1038/ncomms11629

Received 11 June 2015 | Accepted 14 April 2016 | Published 31 May 2016

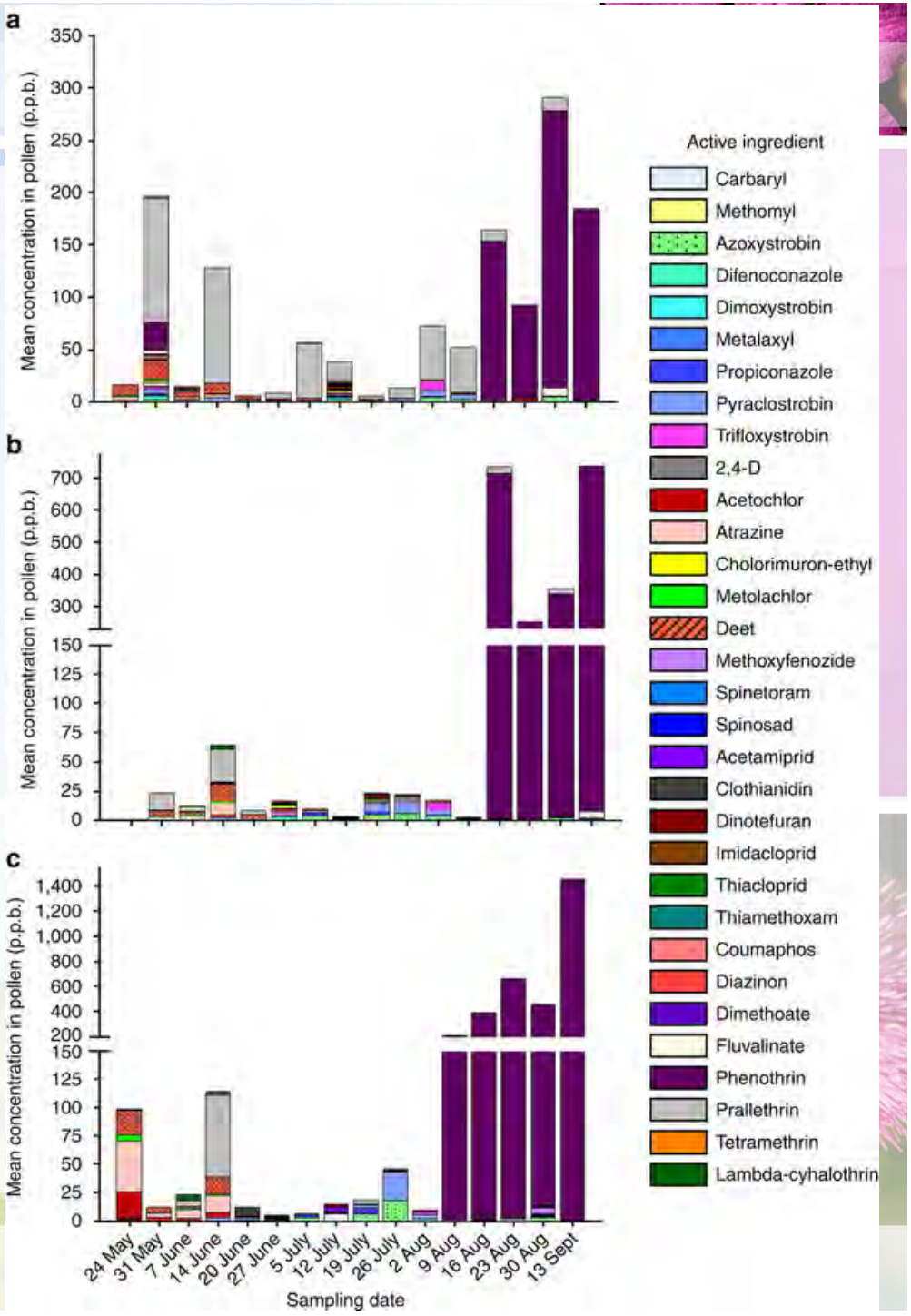
PDF | Citation | Reprints | Rights & permissions | Article metrics

Abstract

http://www.nature.com/ncomms/2016/160531/ncomms11629/full/ncomms11629.html

Figure 1: The mean concentration of pesticide-active ingredients detected in pollen collected by honey bees from three sites that vary in surrounding land-use types.

(A) NON-AGRICULTURAL AREA. (B) ADJACENT TO UNTREATED MAIZE FIELD. (C) ADJACENT TO NEONICOTINOID-TREATED MAIZE FIELD. P.P.B., PARTS PER BILLION.



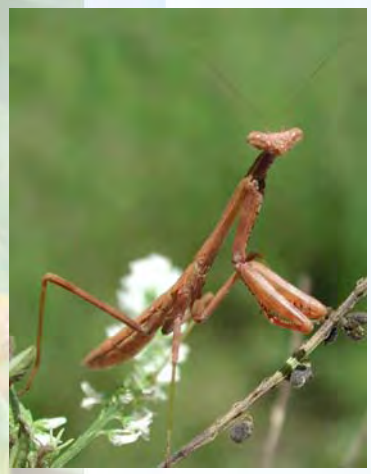
A sobering thought…
Neonicotinoids and annual crops

- **Most annual crops are treated: all corn (90+ million acres), 60-70% soybeans (40+ million acres), canola, wheat, cotton. Total of ≈ 200 million acres/year**
- **Systemic in plant tissues to protect seed, seedling and root systems. Effectiveness varies widely across pests.**
- **Some ornamental applications-Ash**

Tips for Protecting Bees from Pesticides… *(pardon me while I get up on my "soap box"…)*

- **Use pesticides only when and where needed**
- **Use and Integrated pest Management approach (IPM)**
- **Choose and use the least toxic pesticide and use at the lowest effective (labeled) rate**
- **Use spray or granule applications instead of dusts**
- **Apply sprays when plants are NOT in bloom or late in the day (night) when bees are not out**
- **Direct spray toward the target plants with the nozzle as close to the target as possible**
- **Reduce insecticide drift with proper application procedures (dandelions in orchard)**

Honeybees are just one of the "goodguys" in the garden…*know your friends*!



Purdue Bee Farm Garden

Designer:
Melinda Appold
(218)591-5879

BH

MWA

04/ 27/2016

L0-1

Plant List

Designer:
Melinda Appold
(218)591-5079

Purdue Bee Farm Garden

DRAWN BY:
BH
DESIGNED BY:
MMA
DATE:
04/ 27/2016

The END...questions???

ONE LAST TIP!

Not A Suggested Pet For Beekeepers!