

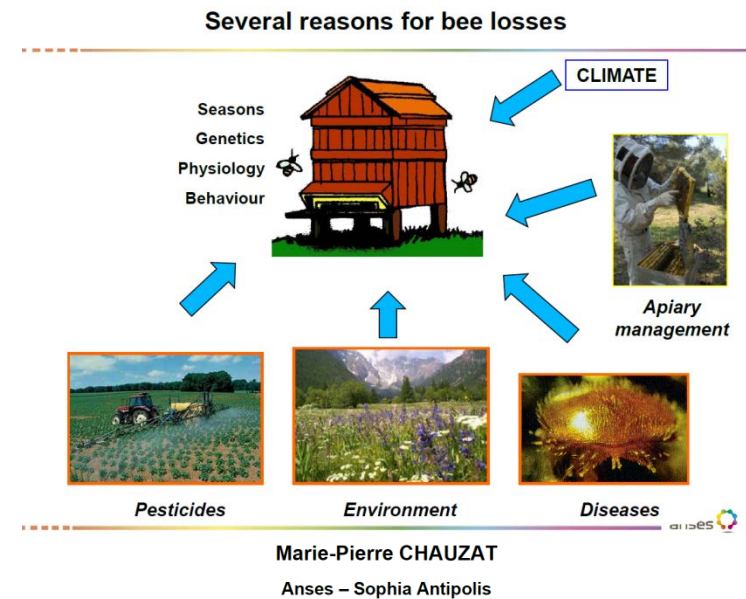
Pollinator Protection for Pesticide Applicators

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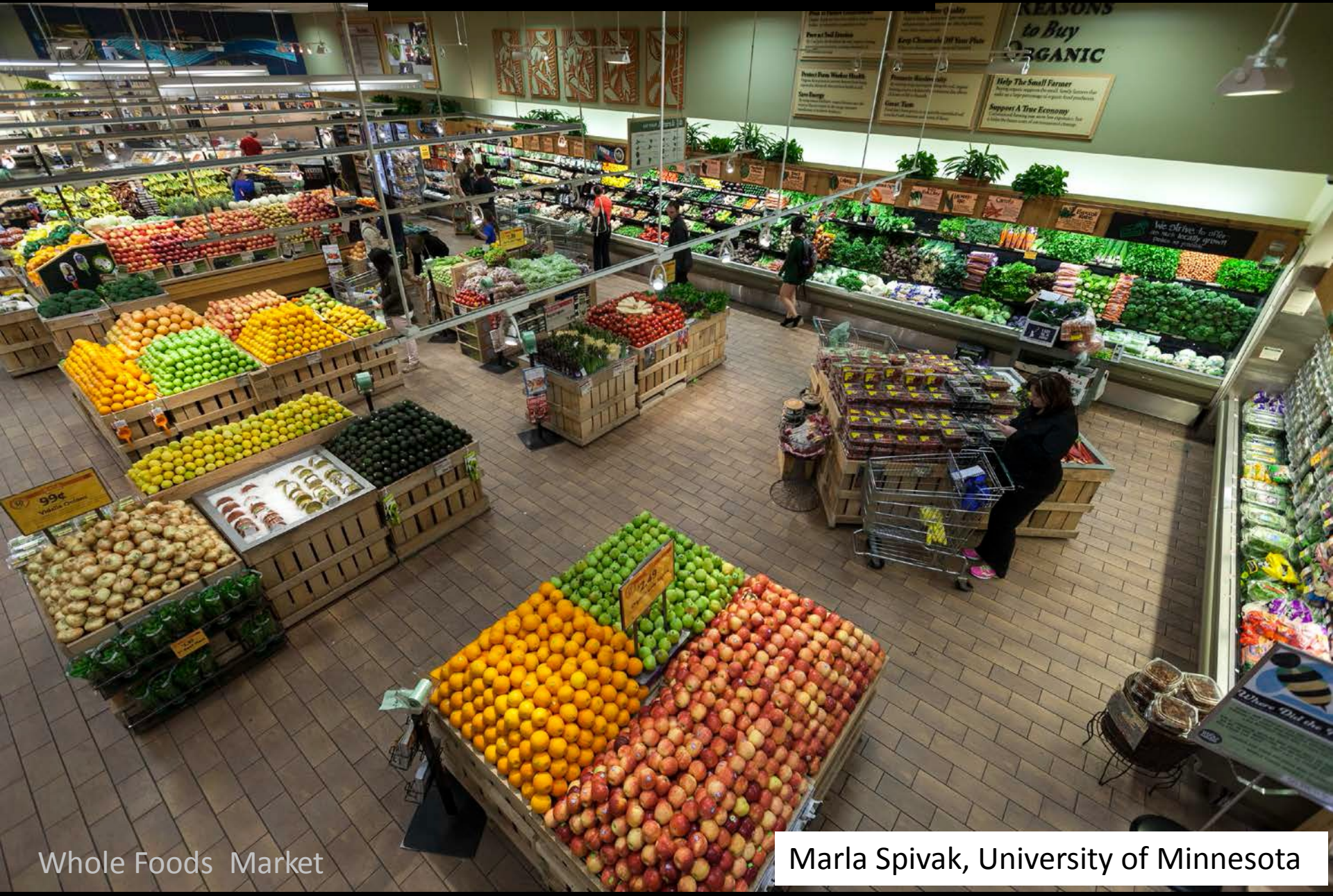


My premise

- * I am not here to defend or indict pesticides
- * I will try to outline the latest research findings
- * I am not a bee or CCD expert by any means
- * My head is still spinning from all the reading I have done on this topic



Life with pollinators...



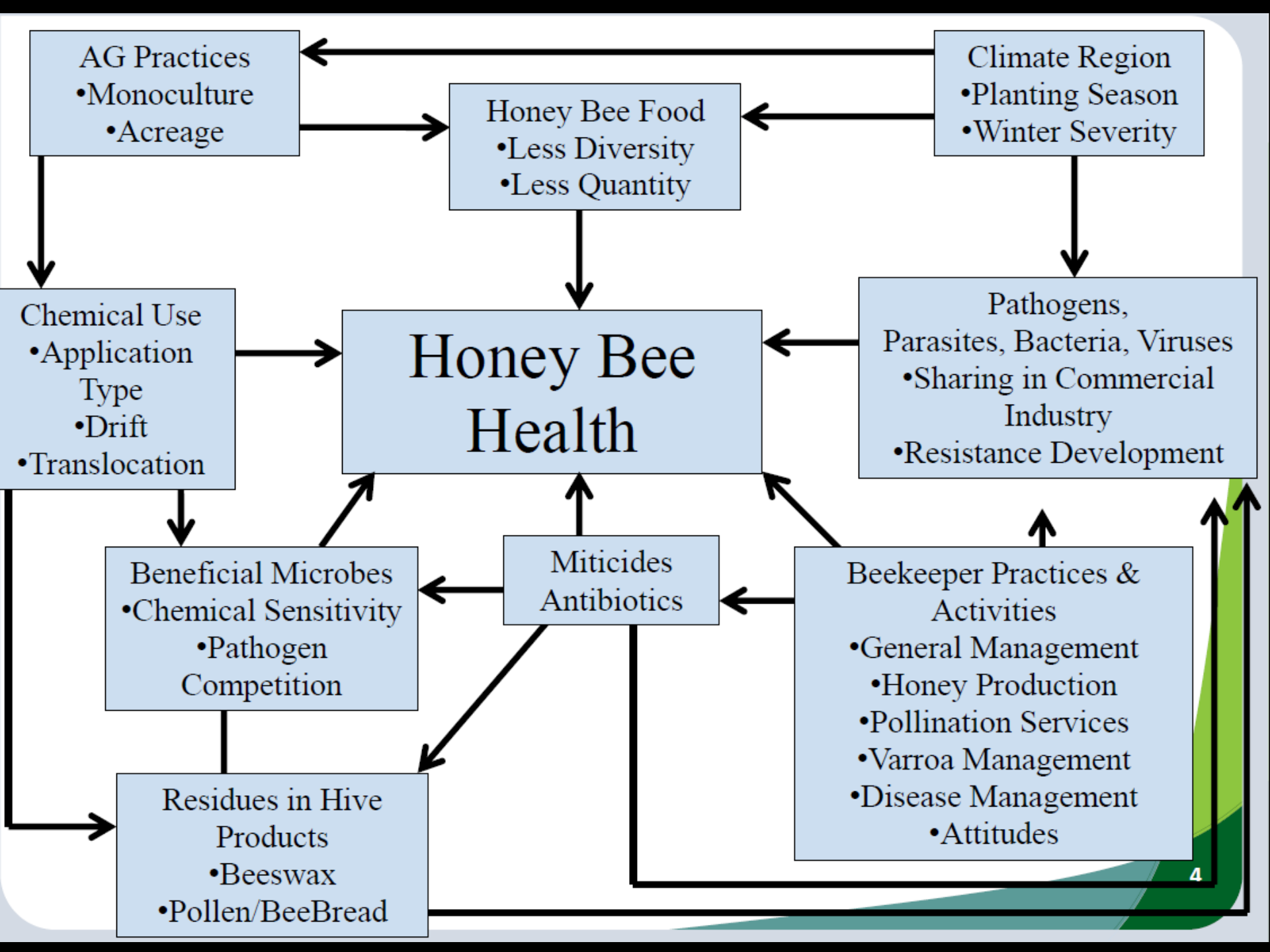
... and without pollinators



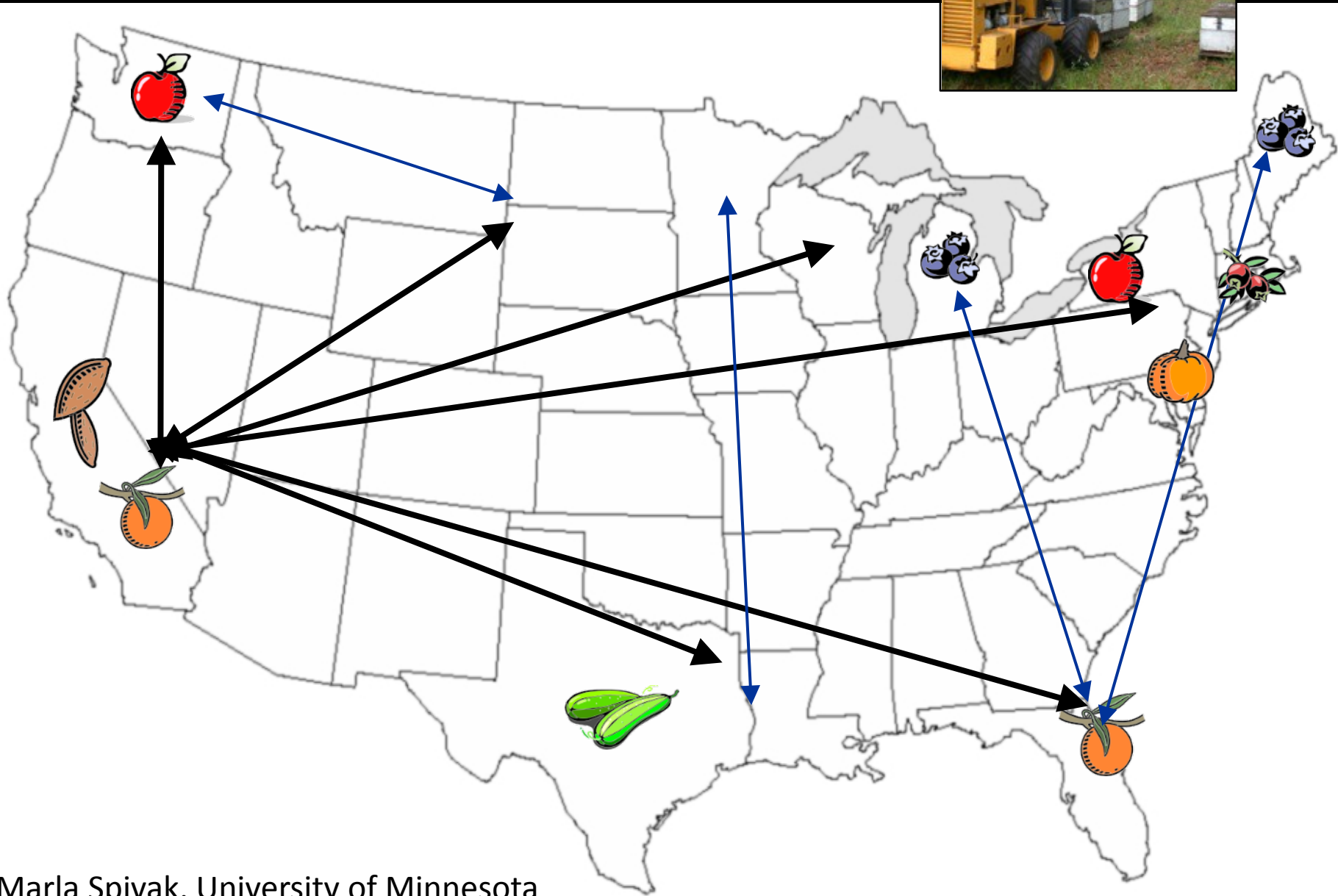


Marla Spivak, University of Minnesota

David Hansen



Major Migratory Routes of Honey Bee Colonies for Pollination



Importance of Pollinators

- Fruit and seed production needed for the survival of the majority of flowering plants in our environment
- Essential to the production of more than 85 crops
- 1 out of every 3 bites of food can be attributed to pollinators



Who Are the Pollinators?

Honey bees are relied on to perform most of the commercial pollination.



What organisms serve as pollinators?



Pollinator Protection

- Bee kills are in the news!
Legislators are asking for bans or moratoriums all over the country
- Growers must be extremely careful
- This case involved “Safari” which is dinotefuran that was applied to control aphids just some linden trees had started to bloom
- The applicator was fined \$1,665.00 for not following the label

Portland, Oregon

Tuesd
PortlandTribune

Pesticide causes largest mass bumblebee death on record

Created on Friday, 21 June 2013 12:00 | Written by Lori Hall | 0 Comments

Toll climbs to 50,000, affected 300 wild colonies



By LORI HALL. Cases of bees to four used back lifts to stage large pieces of netting over the trees.

Tens of thousands of bumblebees and other pollinators were found dead under trees at the Target store in Wilsonville on Saturday. The discovery was a strange and ironic start to National Pollinator Week, a symbolic annual event intended to raise public awareness about the plight of bees.

The massive bee kill was documented on Monday by Rich Hatfield, a conservation biologist with the Portland-based Xerxes Society for Invertebrate Conservation. Several shoppers at the store called him to report that there were dead and dying bees all over the parking lot. Specifically, the bees were clustered under dozens of European Linden trees. The Xerxes Society is internationally known for its work on bee conservation. <http://www.xerxes.org>

Earl Blumenauer proposes moratorium on use of pesticides harming bees

Created on Friday, 12 July 2013 15:30 | Written by Steve Law | 0 Comments

U.S. Rep. Earl Blumenauer, D-Portland, introduced a bill in the U.S. House of Representatives on Friday that would place a national moratorium on the use of certain pesticides suspected of harming bees.

Blumenauer's measure would restrict use of neonicotinoid pesticides, a class that includes the chemical compound suspected of causing the massive bumblebee deaths near the Target store in Wilsonville last month. An estimated 50,000 bees died on or around European Linden trees near the store that state agriculture inspectors determined had been sprayed with an insecticide known as dinotefuran, sold commercially as Safari.

The ag department later announced temporary restrictions in Oregon on the sale of 18 pesticides that contain dinotefuran.

In April, the European Union created continent-wide restrictions on the use of bee-harming pesticides. A majority of member nations voted to place a two-year ban on the use of three neonicotinoids suspected of doing harm to bees, according to the



By LORI HALL. Nets were placed over European Linden trees near Wilsonville Target after massive bumblebee deaths there traced to pesticide.

Pollinator Protection Checklist

1. Read and follow the label
2. Determine if the pesticide is toxic to pollinators
3. Learn about local pollinator visitation habits
4. Use Integrated Pest Management
5. Follow pesticide stewardship practices
6. Cooperate and communicate with others
7. Know symptoms of pesticide exposure to bees
8. Check local ordinances pertaining to pollinators



Pollinator Protection Checklist

1. Read and follow ALL pesticide label directions and precautions.

- ✓ Must reduce risk of pesticide exposure to honey bees and other pollinators



Many insecticides have specific label warnings



BEE CAUTION: May kill honeybees and other bees in substantial numbers. This product is highly toxic to bees exposed to direct treatment or residues on crops or weeds in bloom.

Notifying beekeepers within 1 mile of treatment area at least 48 hours before product is applied will allow them to take additional steps to protect their bees.

Limiting applications to times when bees are least active, e.g., within 2 hours of sunrise or sunset, will minimize risk to bees.

For crops in bloom (except corn and soybeans):

Do not apply this product to target crops or weeds in bloom.

For corn and soybeans:

If application cannot be avoided when target crop or weeds are in bloom, limiting applications to times when bees are least active, e.g., within 2 hours of sunrise or sunset, will minimize risk to bees.



Look for the bee icon on new labels

- * Products with acute or residual toxicity to pollinators will have the bee icon on their labels
- * The new warnings will be next to that icon



Pollinator Protection

THE NEW EPA BEE ADVISORY BOX On EPA's new and strengthened pesticide label to protect pollinators

PROTECTION OF POLLINATORS

APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.

Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators. Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at:
<http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx>

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state/tribe, go to: www.epa.gov. Pesticide incidents can also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.

The new bee icon helps signal the pesticide's potential hazard to bees.

Makes clear that pesticide products can kill bees and pollinators.

Bees are often present and foraging when plants and trees flower. EPA's new label makes it clear that pesticides cannot be applied until all petals have fallen.

Warns users that direct contact and ingestion could harm pollinators. EPA is working with beekeepers, growers, pesticide companies, and others to advance pesticide management practices.

Highlights the importance of avoiding drift. Sometimes, wind can cause pesticides to drift to new areas and can cause bee kills.

The science says that there are many causes for a decline in pollinator health, including pesticide exposure. EPA's new label will help protect pollinators.




Read EPA's new and strengthened label requirements: <http://go.usa.gov/jHH4>

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New use directions – Ag products

2. FOR FOOD CROPS AND COMMERCIALY GROWN ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT ARE ATTRACTIVE TO POLLINATORS



Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless one of the following conditions is met:

- **The application is made to the target site after sunset**
- **The application is made to the target site when temperatures are below 55°F**
- **The application is made in accordance with a government-initiated public health response**
- **The application is made in accordance with an active state-administered apiary registry program where beekeepers are notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying**

New use directions – Ag products & Non-Ag products

- **The application is made due to an imminent threat of significant crop loss, and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be made to notify beekeepers no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.**

3. Non-Agricultural Products:



Do not apply [insert name of product] while bees are foraging. Do not apply [insert name of product] to plants that are flowering. Only apply after all flower petals have fallen off.

Pollinator Protection Checklist

2. Determine if the pesticide may be toxic to pollinators

- The Environmental Hazard section of a label will indicate if a pesticide is **moderately** or **highly toxic** to bees that contact the pesticide
- There is also a “**practically non-toxic to pollinators**” category of pesticides



Did You Know?

- Most **pesticides** are not acutely toxic to honey bees and other pollinators
- As a general rule: **insecticides** pose greater concerns to pollinators than fungicides and herbicides, but all can have impacts
 - However, **not all insecticides are toxic to pollinators**



Did You Know?

- New research shows that some combinations of insecticides and fungicides can be very toxic to bees
- Research also shows that pollen contaminated with some fungicides can impact bee larvae by interfering with beneficial microbes used in making the “bee bread” (fermented pollen)
- Any pesticide that is toxic to insect pollinators will have new warnings on its label

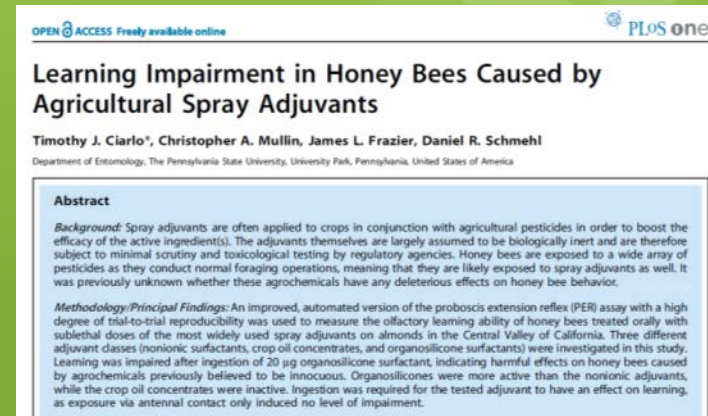


Formulation types differ in risk to pollinators

- More risky
 - Dusts
 - Microencapsulated
 - Wettable powders
 - Flowables
 - Emulsifiable concentrates
 - Systemic products
 - Some adjuvants
 - Super-Organosilicone surfactants

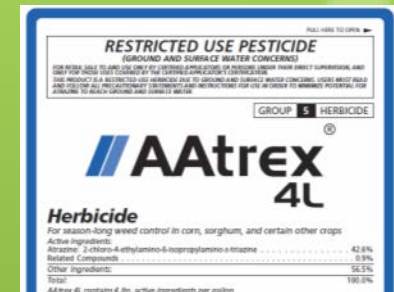


No endorsement intended or implied



Formulation types differ in risk to pollinators

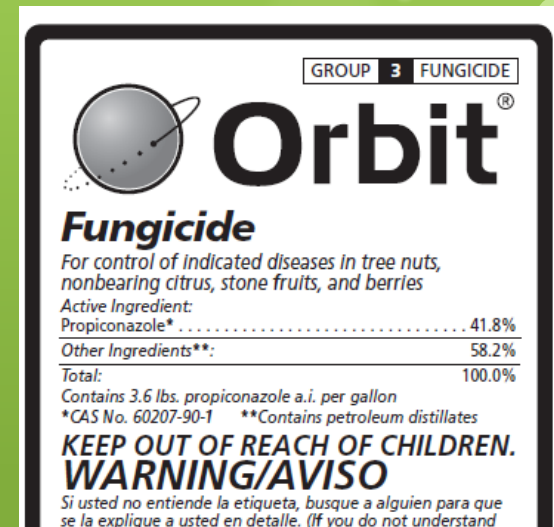
- Less risky
 - Non-systemic granules
 - Soluble liquids and powders
 - Oil sprays
 - Some adjuvants
 - Other non-ionic surfactants show some toxicity and
 - Crop oils seem to be less toxic



No endorsement intended or implied

Different Tank Mixes may also increase risk to pollinators

- Some combinations can be very risky...
 - Insecticides mixed with miticides
 - Insecticides mixed with fungicides or PBO
 - Acetamiprid (Assail) and propiconazole (Orbit)
 - Pyrethroids and propiconazole
 - Piperonyl butoxide and some neonicotinoids
- Avoid tank mixes entirely



No endorsement intended or implied

Even pesticides approved for organic grower use can be highly toxic to pollinators

Toxicity of Common Organic-Approved Pesticides to Pollinators

PESTICIDE	NON-TOXIC	LOW TOXICITY	HIGHLY TOXIC
Insecticides/Repellants/Pest Barriers			
<i>Bacillus thuringiensis</i> (Bt)	Green		
<i>Beauveria bassiana</i>			Red
<i>Cydia pomonella granulosis</i>	Green		
Diatomaceous Earth			Red
Garlic	Green		
Insecticidal Soap			Red
Kaolin Clay	Green		
Neem		Yellow	
Horticultural Oil			Red
Pyrethrins			Red
Rotenone			Red
Sabadilla			Red
Spinosad			Red
Herbicides/Plant Growth Regulators/Adjuvants			
Adjuvants		Yellow	
Corn Gluten	Green		
Gibberellic Acid	Green		
Horticultural Vinegar		Yellow	
Fungicides			
Copper		Yellow	
Copper Sulfate			Red
Lime Sulfur	Green		
Sulfur			Red

Soaps and Oils, only when directly sprayed upon the pollinator

INVERTEBRATE CONSERVATION FACT SHEET

Organic-Approved Pesticides Minimizing Risks to Pollinators



While organic farming offers significant environmental benefits, even some organic-approved pesticides can cause harm to pollinators.

By selecting the least toxic options and applying them when pollinators are not present, harm can be minimized.

Productive cropping systems do not have to rely on chemical inputs for pest control. Photograph by Matthew Shepley

Approximately five thousand species of bees are native to the United States. These wild insects provide crop pollination services, and are often specialized for foraging on particular flowers, such as tomatoes, squash, berries, orchard, or forage crops. This specialization results in efficient pollination, high yields, and larger fruit.

While the non-native European honey bee (*Apis mellifera*) is the most important managed crop pollinator, its numbers are in decline because of disease and other factors. This makes native bees, which contribute an estimated \$3 billion worth of crop pollination annually to the U.S. economy, more important than ever. Native bees are of particular importance to organic farmers because unlike honey bees, their populations can be supported without the use of antibiotics and other chemical inputs.

The reduced use of pesticides, as well as more sustainable management practices, makes organic farms an important asset in protecting our national pollinator resources. Many organic operations already have good numbers of wild bees. In some cases, these native bees can effectively provide all necessary crop pollination services when adequate habitat is available and low-toxicity management practices are implemented.

Unfortunately, however, even pesticide approved for organic agriculture can cause significant harm to bees. This fact sheet provides a brief overview of how to select and apply pesticides for organic farm operations while minimizing pollinator mortality. Keep in mind that the same practices outlined here that help protect pollinators also may protect beneficial insects such as parasitoid wasps, predators, flies and beetles, snails and various bugs, leeches, and others. The presence of these insects can further reduce pest pressure and the need for chemical treatment.

Written by Eric Mader

The Xerces Society for Invertebrate Conservation
www.xsociety.org

Residual Toxicity

Definition:

Residues on plants which can harm pollinators that visit the area after the treatment is dry or absorbed by the soil

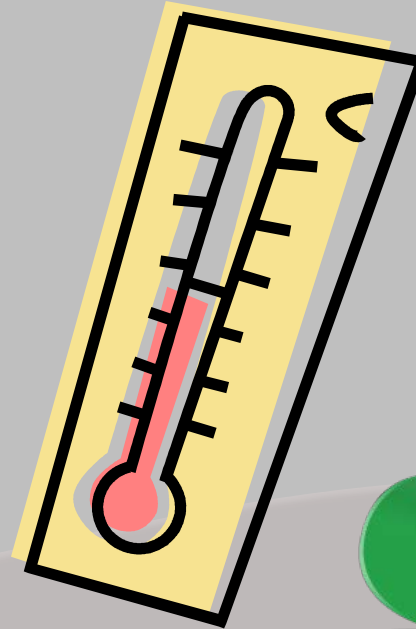
Some pesticides have extended residual toxicity to bees, other pollinators and beneficial organisms



Residual Toxicity

Environmental conditions can affect residual toxicity

- Examples: **Low temperatures** or **heavy dews** for the night or early AM after application may increase residual toxicity



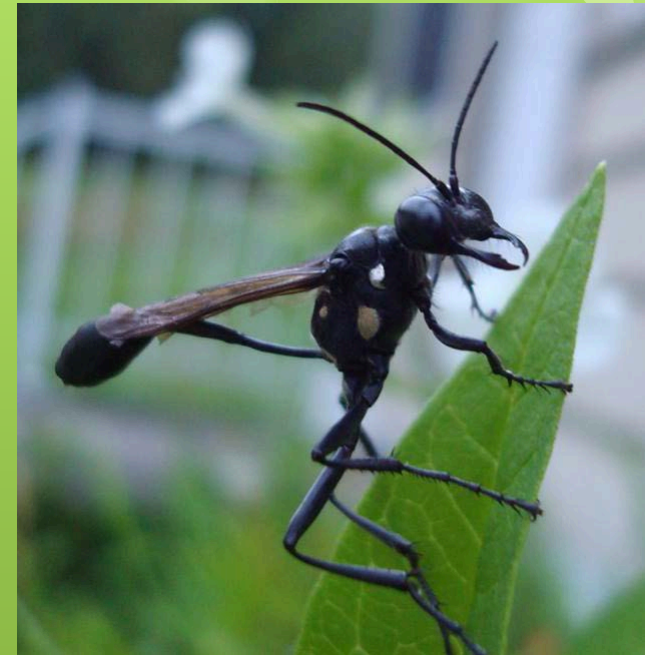
Northern wintered bees fly at lower temps

- * Northern bees may fly at temps in the mid – high 40's
- * Especially to visit early blooming trees, shrubs and weeds
 - * Serviceberry
 - * Cherries
 - * Willow
 - * Crabapples
 - * Bluets
 - * Dandelion
 - * Rhodora



Systemics can be harmful to beneficial predators and parasites

- Spider mite outbreaks have been observed after imidacloprid applications
 - May be the result of secondary poisoning of predators
 - May act as a fertility drug to the mites
 - Improves the health of the plant which feeds the mites
- Hemipteran predators like pirate bugs or big-eyed bugs may be eliminated
 - This may cause outbreaks of chinch bugs in turf
 - These “true bugs” may also feed on plant sap directly



Impacts of neonics used on trees and woody ornamentals

- Imidacloprid and dinotefuran are both highly toxic to bees.
- Low doses of these neonics can cause bees to behave in ways that lead to death or colony weakening
- Imidacloprid changes to its olefin stage in trees and the olefin stage is 10 – 16 times more toxic to insects
- Peak concentrations may occur 18 months after a soil treatment



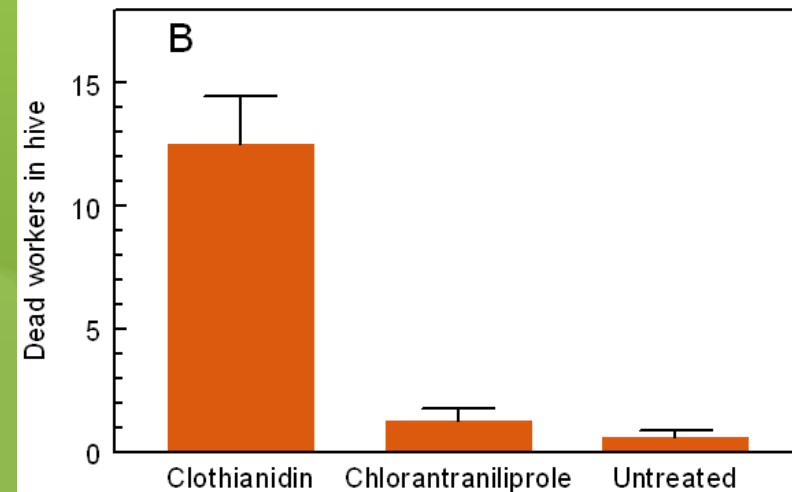
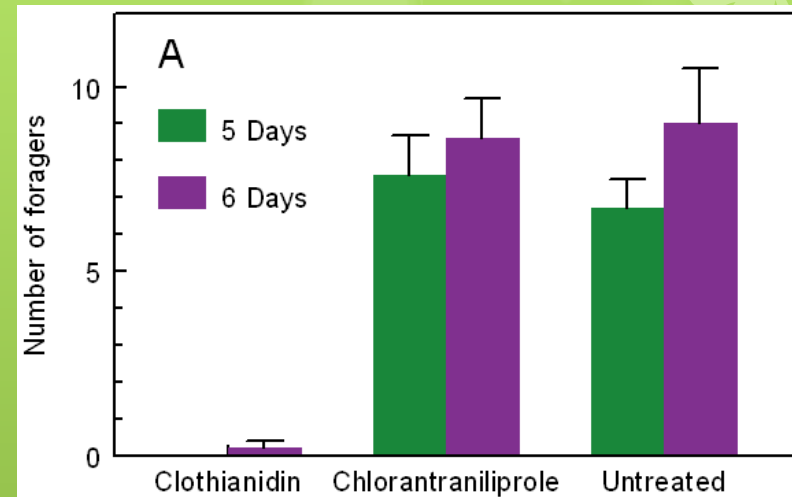
Impacts of neonics used on trees and woody ornamentals

- Use in woody plants tends to concentrate neonics
 - 32-inch tree treatment is equivalent to treating one acre of agricultural crops
 - Higher rates can be more risky to pollinators
 - Must not treat trees or shrubs that produce flowers that are highly attractive to pollinators unless they have finished flowering for that season
 - Best to use dinotefuran over imidacloprid on trees that provide bee attractive blooms
 - Imidacloprid can persist for as long as 8 years
 - Dinotefuran usually breaks down over one growing season



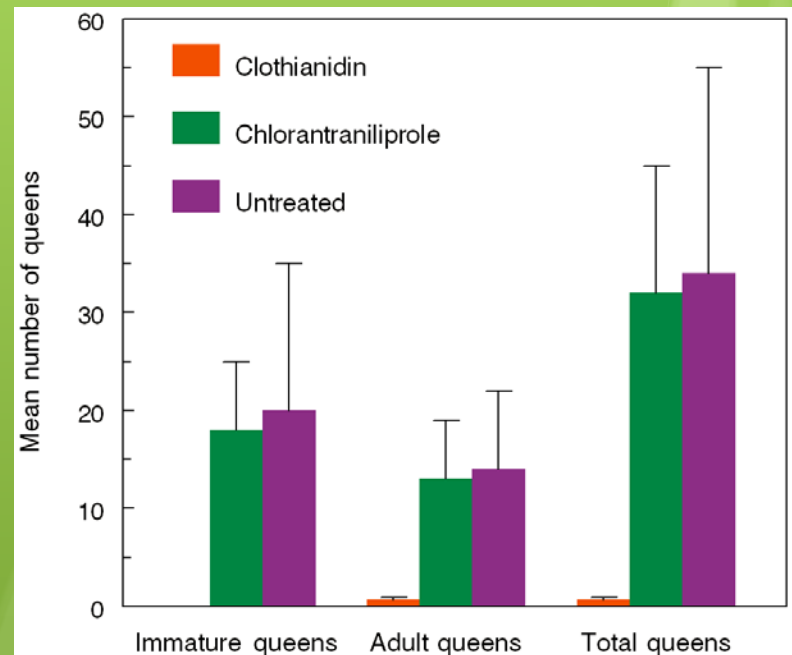
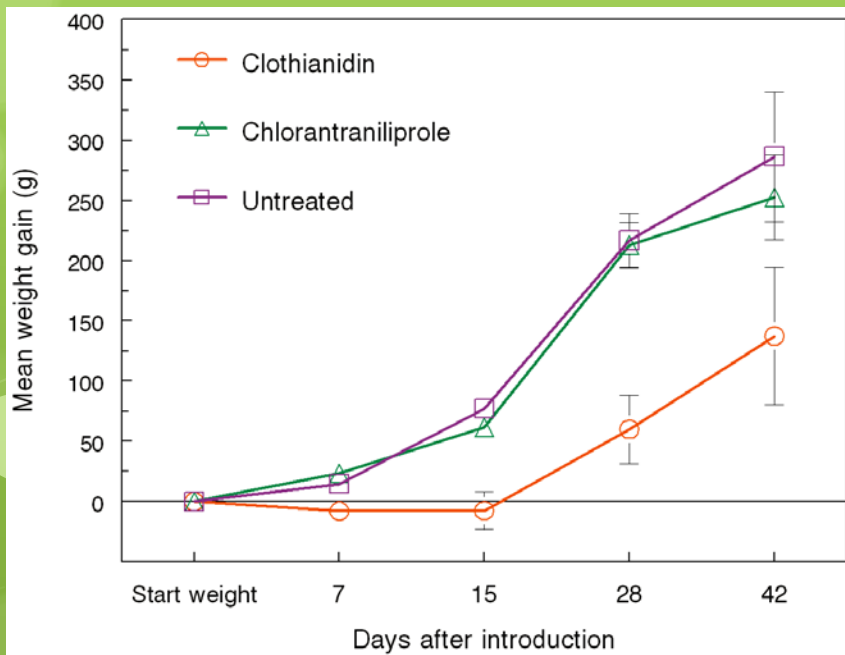
Risk of systemic insecticide application to turf with flowering weeds

- Clothianidin & chlorantraniliprole were applied to turf with white clover flowers and bumble bees were confined to the treatment plots for 6 days
- Clothianidin caused
 - reduce weight gain
 - stopped queen production in bumble bees, and
 - also resulted in over a 10-fold increase in worker deaths
- Chlorantraniliprole had no statistically significant effects compared to the untreated check



Risk of systemic insecticide application to turf with flowering weeds

Impacts of clothianidin on bumble bee weight and queen production

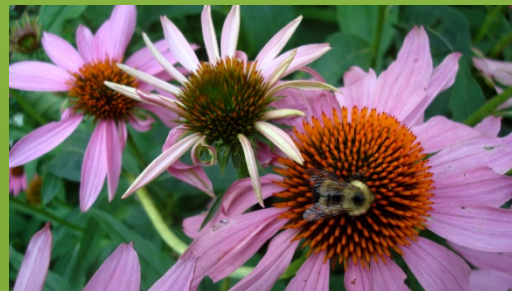


Risk of systemic insecticide application to turf with flowering weeds

- Unfortunately bumble bees are not repelled by application of either insecticide
- Mowing treatment plots and removing the clover blossoms just before treatment prevented the impact on bumble bees

Table 3. Absence of acute adverse effects on *Bombus impatiens* colonies after 2 weeks' exposure to turf with flowering white clover that had bloomed after the sward was mown to remove flowers present at the time of treatment.

Treatment	Adult workers per hive ^a		Immature bees per hive ^b		Honey pots	Total weight (g) of live adults ^c	Hive weight (g)
	Live	Dead	Live	Dead			
Clothianidin	93±9	11±4	12±8	6±1	52±6	13.0±1.3	585±11
Chlorantraniliprole	130±12*	7±2	8±4	6±2	69±6	16.7±1.6	621±16
Untreated	81±8	7±2	0	3±1	56±3	11.3±0.9	588±8



No Residual Toxicity

If the pesticide **does not** have extended residual toxicity:

The pesticide can still harm pollinators exposed to **direct treatment**; during or shortly after the application while the plants are still wet

Can often be applied **after evening pollinator foraging is complete** without harming pollinators that arrive the next day (if we have dry weather)

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND
DOMESTIC ANIMALS**

CAUTION:Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling.

FIRST AID

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.
IF IN EYES: Flush eyes with plenty of water. Call physician if irritation persists.

User Safety Recommendations:
Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Do not apply directly to water. Do not contaminate water when disposing of equipment washwaters or rinsate.

BEE HAZARD

This product is toxic to bees exposed to direct treatment. Do not apply this product while bees are actively visiting the treatment area.

PHYSICAL AND CHEMICAL HAZARDS

Do not use or store near heat or open flame.

SFA 50®

**Triple Action
Neem Oil**

**Broad Spectrum Fungicide/Insecticide/Miticide
For Indoor/Outdoor Use on
Ornamental Flowering Plants,
Trees, Shrubs, Foliage,
Vegetables, Fruits, Nuts and
Home and Residential Landscapes**



ACTIVE INGREDIENT:
Clarified Hydrophobic Extract of Neem Oil 70%
INERT INGREDIENTS: 30%
TOTAL 100%

Neem Oil is a registered product of Certis USA

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

See Side Panel for additional PRECAUTIONARY STATEMENTS

Distributed By:

Southern Agricultural Insecticides, Inc.
Palmetto, FL 34220 Hendersonville, NC 28793 Boone, NC 28607
E.P.A. Reg. No. 70051-2-829 J1 E.P.A. Est. No. 829-FL-1

Net Contents Liquid: 1 Pint (.474liters)

Additional Restrictions for pesticide with Extended Residual Activity

www.epa.gov/pesticides/ecosystem/pollinator/bee-label-info-lrt.pdf

2. FOR FOOD CROPS AND COMMERCIALY GROWN ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT ARE ATTRACTIVE TO POLLINATORS



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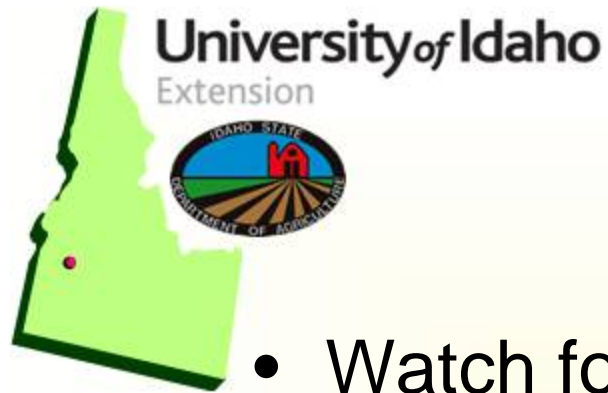
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- **The application is made in accordance with an active state-administered apiary registry program where beekeepers are notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying**
- **The application is made due to an imminent threat of significant crop loss, and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be**

Pollinator Protection Checklist

3. Understand local pollinator visitation habits.

- Pollinators are at most risk **when ANY vegetation is blooming.**
- Observe application timing on the label relative to the **blooming stage of crop and other plants.**
- The right timing may be reduced by extended bloom or unfavorable weather conditions.
- **Evening or nighttime** applications are generally the **least harmful** to honey bees **but can still be harmful to native pollinators**





During Application

- Watch for bee activity.
 - Stop spraying if bees are present at the application site.
- Be careful with refill or mixing/loading operations.
 - Clean up any spills.
 - Don't contaminate any standing water.





After Application

- Properly dispose of leftover tank mix, rinsates and wash waters.
 - Bees are attracted to water sources.
 - Cover, drain, or dispose of any puddles or pools.
- Store unused pesticides in a secure facility.



Pollinator Protection Checklist

4. Use Integrated Pest Management (IPM)

- Consider all suitable practices for managing pests.
- Use cultural practices that discourage pests from using a crop or landscape as a habitat.
- Carefully diagnose your pest problems.
- Monitor and assess pest populations to determine when levels warrant pesticide treatment.



www.gotpests.org

Pollinator Protection Checklist

4. Use Integrated Pest Management (IPM)

- Determine your best combination of management options.
- Use the recommended pesticide at the lowest appropriate labeled rate, based on the life stage of the pest/infestation level with the proper timing and placement.
 - Using rates below the labeled rate may cause loss of control or development of pest resistance.

		Rate
		DuPont™ LANNATE® LV Pts. Per Acre
Crops	Insects	
Broccoli	Loopers Diamondback Moth	1 1/2 - 3 **

Pollinator Protection Checklist

5. Always follow pesticide stewardship practices.

- Minimize spray drift.
- Minimize volatility.
- Minimize off-site drift of seed treatment materials.



What Can You Do...?

- Good weed control in nursery fields
- Be aware of blooming plants in the area when applying pesticides
- Mow blooming weeds around application sites before application, when possible



Pollinator Protection Checklist

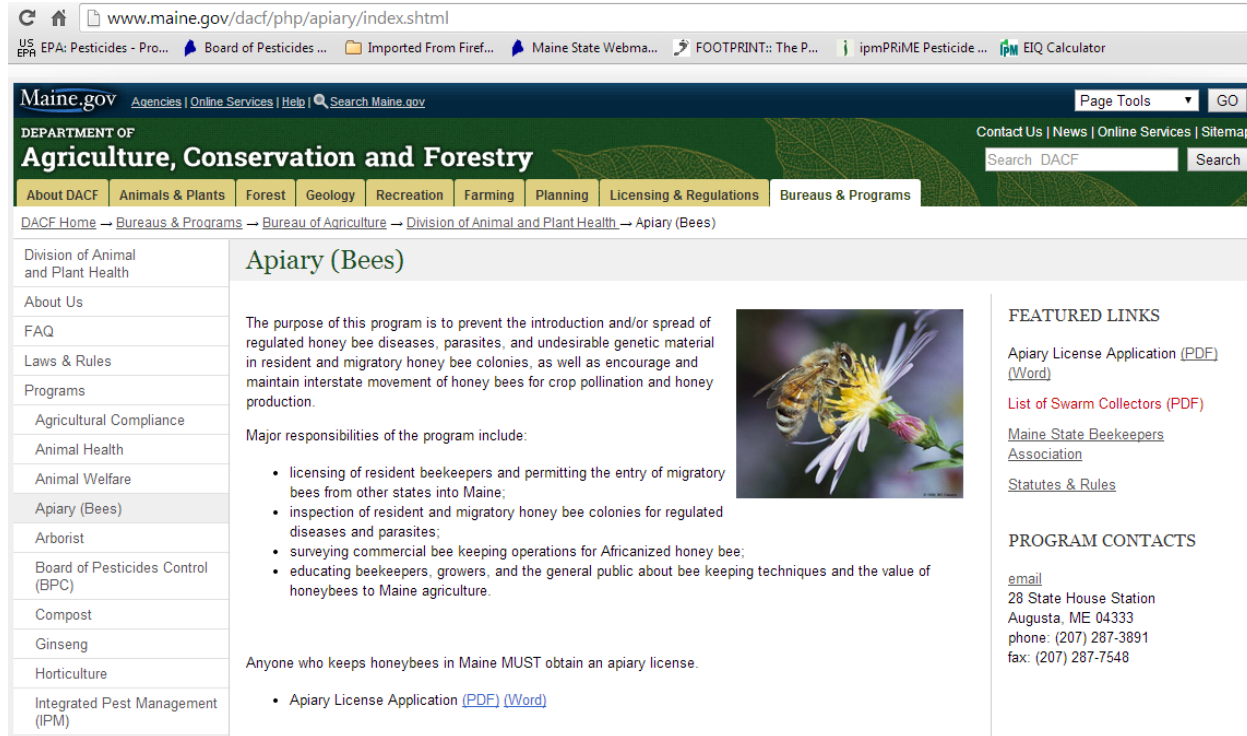
6. Cooperate and communicate with others who are concerned about preserving beneficial insects, including pollinators.

- Beekeepers
- Custom applicators
- Neighboring growers



The DACF has a registered beekeeper list

- Urban & suburban applicators can contact the DACF apiarist to find out if any registered beekeepers are within 2 miles of the areas they are planning to apply pollinator toxic pesticides



www.maine.gov/dacf/php/apiary/index.shtml

US EPA: Pesticides - Pro... Board of Pesticides ... Imported From Firef... Maine State Webma... FOOTPRINT:: The P... ipmPRIME Pesticide... EQ Calculator

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Animal Welfare

Apiary (Bees)

Arborist

Board of Pesticides Control (BPC)

Compost

Ginseng

Horticulture


Integrated Pest Management (IPM)

Apiary (Bees)

The purpose of this program is to prevent the introduction and/or spread of regulated honey bee diseases, parasites, and undesirable genetic material in resident and migratory honey bee colonies, as well as encourage and maintain interstate movement of honey bees for crop pollination and honey production.

Major responsibilities of the program include:

- licensing of resident beekeepers and permitting the entry of migratory bees from other states into Maine;
- inspection of resident and migratory honey bee colonies for regulated diseases and parasites;
- surveying commercial bee keeping operations for Africanized honey bee;
- educating beekeepers, growers, and the general public about bee keeping techniques and the value of honeybees to Maine agriculture.



Anyone who keeps honeybees in Maine MUST obtain an apiary license.

- Apiary License Application ([PDF](#)) ([Word](#))

FEATURED LINKS

[Apiary License Application \(PDF\) \(Word\)](#)

[List of Swarm Collectors \(PDF\)](#)

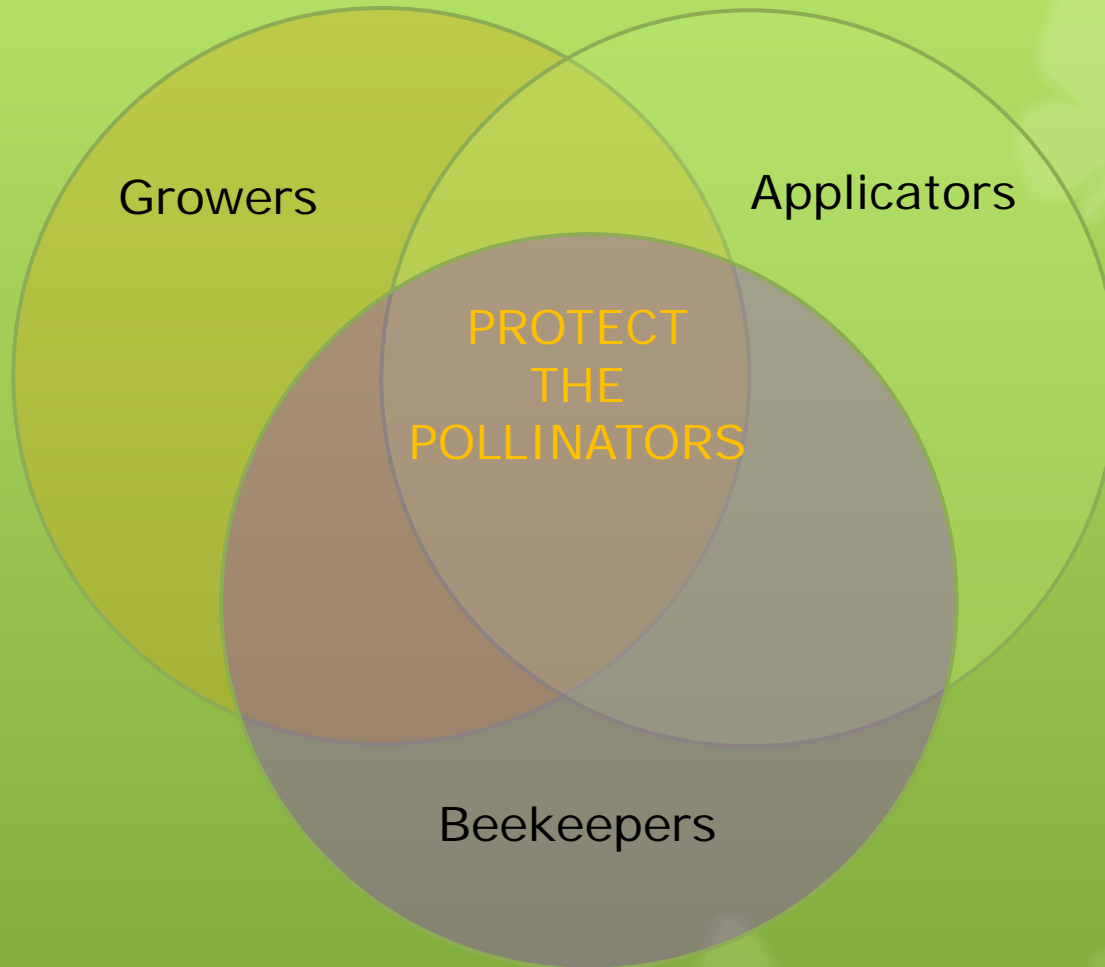
[Maine State Beekeepers Association](#)

[Statutes & Rules](#)

PROGRAM CONTACTS

[email](#)
28 State House Station
Augusta, ME 04333
phone: (207) 287-3891
fax: (207) 287-7548

Pollinator Protection requires **COMMUNICATION!**



Home & Garden (Homeowner) Use of Pesticides

8% of Conventional Pesticide Use, but 15% of the Insecticide Use

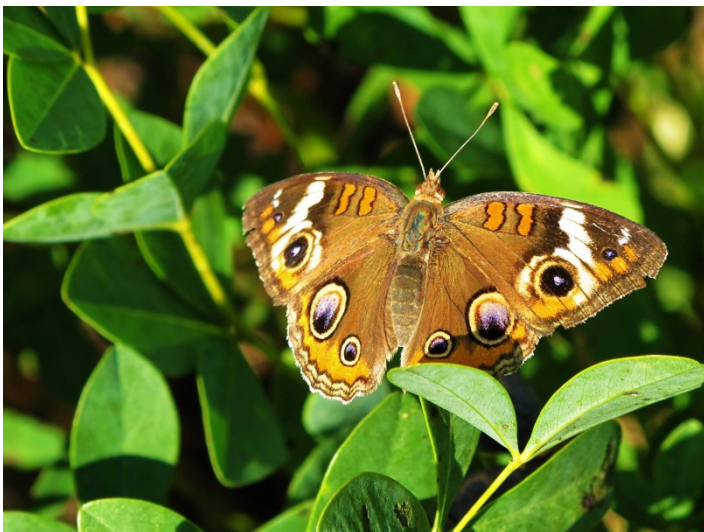
National Data

- * 67% herbicides
- * 22% insecticides
- * 11% fungicides

Qualitative Estimate of Insecticides Sold *

Active Ingredient	Number of Units Sold
Bifenthrin	18,000
Cypermethrin	12,000
Carbaryl	10,000
Chlorantraniliprole	7,500
Imidacloprid	2,500
Pyrethrins	2,100

* 2013 Maine Sales Reports



Greenhouses & Nursery

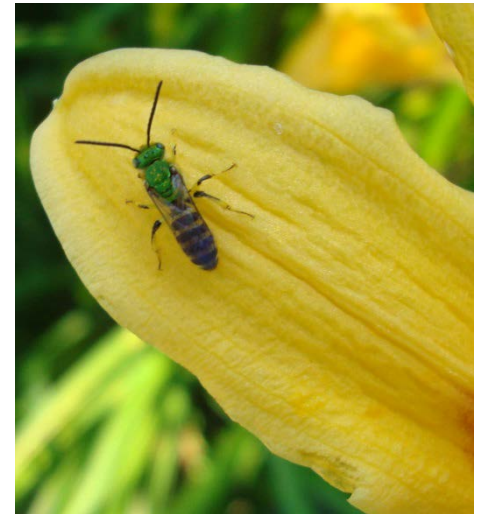
- * These businesses involve – among other things – flowering plants, shrubs and trees
- * Consumers don't want infested plants
- * We know neonics are used some in this industry
- * Some growers are focusing on the use of beneficial insects
- * The BPC doesn't have very good data on this industry



So Where Do We Focus Our Efforts?

Insecticide Use by Professional Applicators

- * 15% of insecticide use is by professional applicators
 - * A significant percentage is applied in, on, and around structures
 - * A significant percentage is used on turf – should be low risk as long as clovers are mowed off
 - * Part is used for mosquito and tick control – watch out for flowering plants
 - * A relatively small part is used on trees and shrubs – but it's worth giving some additional thought



Home & Garden Insecticide Use

15% of the insecticide use

- * Based on the products purchased in Maine, we think:
 - * The bifenthrin is used primarily as an ant control around structures
 - * The imidacloprid is probably used for turf grub control
 - * Carbaryl would be used on gardens
 - * This is a good sector to do some work on



A Big Picture Look

Where to focus our efforts

- * We need more research because the precise role of pesticides in bee decline is still quite unclear
- * We need better communication between beekeepers and pesticide applicators
- * We should continue with education & promotion of best management practices with:
 - * Agricultural producers
 - * Tick & mosquito applicators
 - * Ornamental applicators
 - * **Homeowners! (15% of the insecticide use in Maine)**





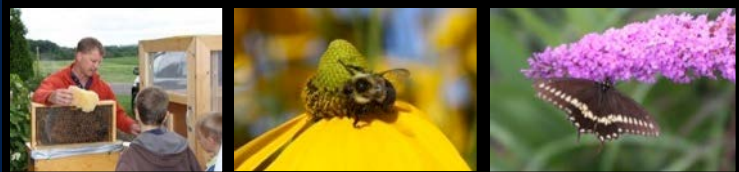
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Resources:

- **Bee Labeling Info Graphic** (PDF). U.S. EPA.
<http://www.epa.gov/opp00001/ecosystem/pollinator/bee-label-info-graphic.pdf>
- **Pollinator Protection web page**, U.S. EPA. <http://www.epa.gov/pesticides/ecosystem/pollinator/>
- **Pollinators and Pesticide Stewardship**. Coalition for Urban/Rural Environmental Stewardship, Syngenta, and Bayer CropScience.
<http://pesticidestewardship.org/pages/resources.aspx>





This presentation was created in partnership with the
Pesticide Education Program, Penn State Cooperative Extension;
and the Pennsylvania Department of Agriculture.

It was slightly modified by
Washington State University
Urban IPM and Pesticide Safety Education Program

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September 2013



Penn State **Extension**
Pesticide Education Program

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Resources

- * <http://www.usda.gov/documents/ReportHoneyBeeHealth.pdf>
- * <http://www.beecdcap.uga.edu>
- * <http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>
- * <http://www.epa.gov/opp00001/ecosystem/pollinator/>

Questions?

* That's all folks!