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Protecting Pollinators

Information for Applicators on Protecting Bees

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Outline

- Background
- CCD – What it is
- Role of pesticides in CCD
- EPA Label Changes
- Practices to reduce bee loss
- Summary

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WHY ALL OF THE ATTENTION TO BEES?

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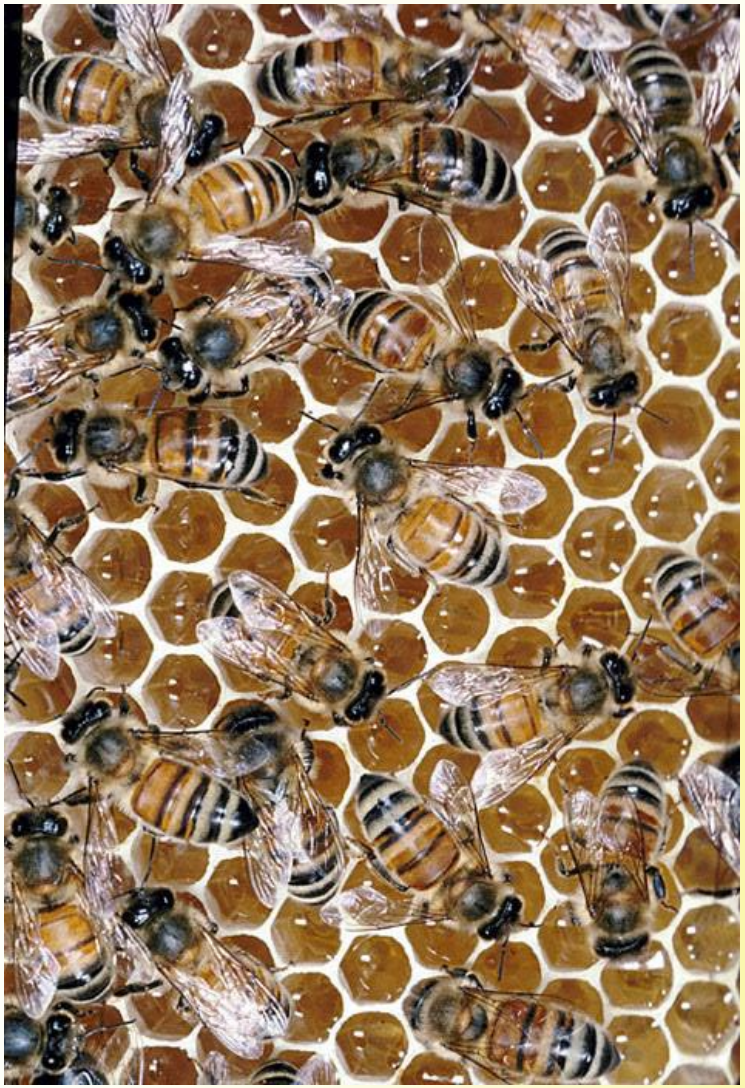
Honey Bees



- Reduction in honey bees survival rates.
- Higher demands for pollinators, honey bees in specific.
- Fears that honey bee populations are not sustainable.
- Pesticide use may be part of the issue.

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COLONY COLLAPSE DISORDER (CCD)

CCD

- Colony Collapse Disorder
  - Affects honeybee species.
  - Worker bees disappear, fail to return to hive.
  - Recognized and named in 2006.
  - Is a world-wide issue.
  - Potential for reduced production, and yields.

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CCD

- Documented similar outbreaks in late 1800's and early 1900's.
- 1972-2005 saw dramatic declines in the numbers of feral colonies.
- 2005 saw the declines in domestic bee colonies.

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Colony Collapse

- Natural losses of colonies occur
  - Winter losses 15-25% considered normal
- Suggested causes include:
  - Malnutrition
  - Pathogens
  - Immuodefiencies
  - Mites
  - Fungus
  - Pesticides
  - Beekeeping practices
  - Electromagnetic radiation

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Significant Issues

- Survivorship of honey bee colonies too low.
- Pollination demands continue to increase.
- Multiple factors are leading to poor colony health (not just pesticides).

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Significant Issues

- CCD affects the honey bees, not other bee pollinators.
  - Leafcutter bee
  - Alkali bee
  - Bumble bee
  - Sweat bee
- Some wasps, butterflies and moths also pollinators.

PESTICIDES AND CCD

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Pesticide Issues

- Pesticide use in its relation to CCD is not completely understood.
- Sublethal effects on honey bees are being studied.
  - Further studies are needed to establish the risks, and possible link to population decline.
  - Herbicides and Fungicides need to be further researched to their possible effects on honey bee populations.

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Significant Issues

- More research is needed to determine the effects of neonicotinoids and pyrethroids on honey bees.
- Modern weed control efforts may have reduced nutrition for colony health.

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What Does This Mean?

- Pollinator Protection Is A Priority!
- Pesticides are not considered to be a direct cause of honey bee CCD.
- All pesticide applications need to consider the actions of the pollinators, not just insecticide applications.

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PROTECTING POLLINATORS

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Items to Consider

RESTRICTED USE PESTICIDE
Due to Toxicity to Fish and Aquatic Organisms
For retail sale to and use only by Certified Applicators, or persons under their direct supervision, and only for those uses covered by the Certified Applicator's certification.

AMBUSH®
INSECTICIDE

Active Ingredient:
Permethrin
(3-Phenoxyphenyl)methyl(±)-cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate* 25.6%
Inert Ingredients 74.4%
Total 100.0%

*Cis/trans ratio: Min 35% (±) cis and max. 65% (±) trans.
AMBUSH insecticide contains 2 lb. active ingredient per gallon and is an emulsifiable concentrate.

KEEP OUT OF REACH OF CHILDREN
WARNING-AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail).

FIRST AID	
If swallowed:	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If in eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

Applicators and other handlers must wear:
- Long-sleeved shirt and long pants.
- Chemical-resistant gloves, such as Barrier Laminate or Butyl Rubber ≥ 14 mils or Nitrile Rubber ≥ 14 mils or Viton ≥ 14 mils.
- Shoes plus socks.
- Protective eyewear.

For Mushroom House Use:
- For exposures in enclosed areas, a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

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.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS
This pesticide is extremely toxic to fish and aquatic invertebrates. Do not apply directly to water or to areas where water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas.

product is highly toxic to bees exposed to direct treatment or residues on blooming s or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if are visiting the treatment area.

/SICAL OR CHEMICAL HAZARDS
ot use or store near heat or open flame.

DIRECTIONS FOR USE
a violation of Federal law to use this product in a manner inconsistent with its labeling.

ot apply this product in a way that will contact workers or other persons, either directly rough drift. Only protected handlers may be in the area during application. For any irements specific to your State or Tribe, consult the agency responsible for pesticide lation.

- Almost all insecticides will have a negative affect on pollinators.
- Herbicides/fungicides may have a negative affect on pollinators.
- Any pesticide application must consider pollinator protection if it is appropriate

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EPA Priority

- Pesticide label changes for neonicotinoid products required for registration.
- Manufacturers need to submit amendments to existing labels by the end of September 2013.

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Label Changes

- All neonicotinoid labels will have application restrictions.
- Watch for the bee hazard icon in the Directions for Use section of the label.
  - Will indicate restrictions or mandates.

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Example of the label changes for pollinator protection.

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 or off-site to pollinator attractive habitat 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, go to: www.aapco.org/officials.html. Pesticide incidents should also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

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Example of the label changes for pollinator protection.

DIRECTIONS FOR USE

1. FOR CROPS UNDER CONTRACTED POLLINATION SERVICES

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless the following condition has been met.

If an application must be made when managed bees are at the treatment site, the beekeeper providing the pollination services must be 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.

2. FOR FOOD CROPS AND COMMERCIALLY 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**
- **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**

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PRACTICES TO REDUCE BEE LOSS

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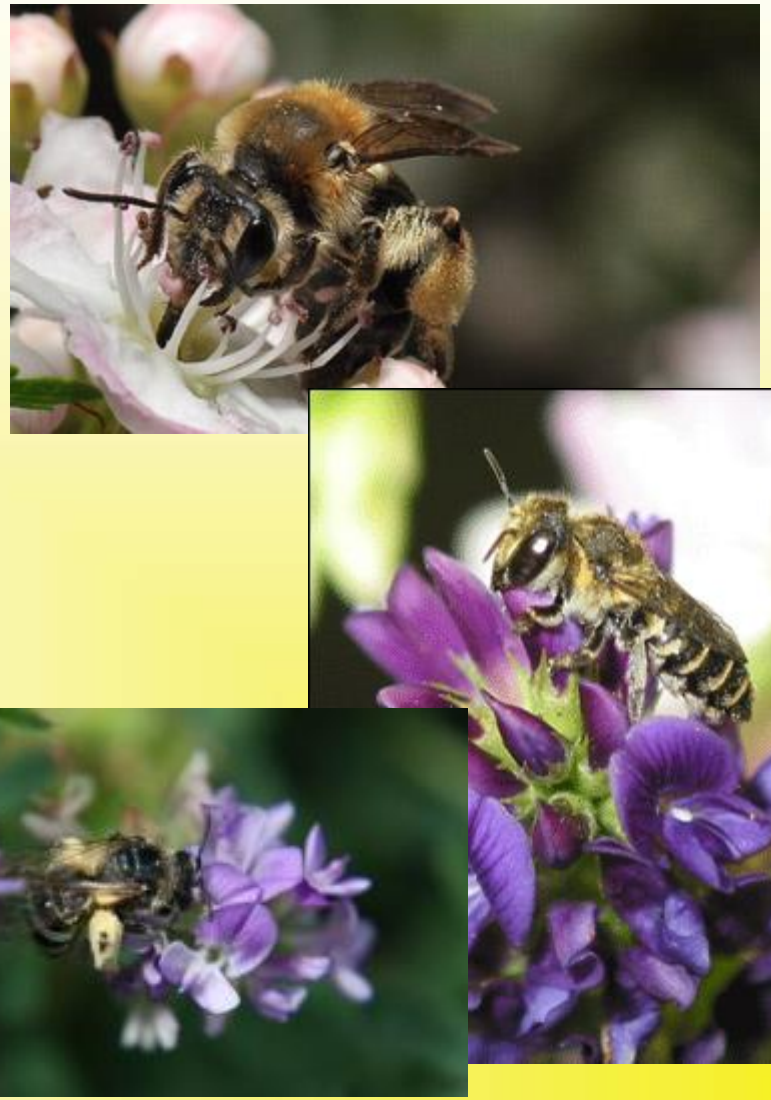
Good Ag Practices

- Use an IPM approach.
  - Monitor and assess pest and beneficial populations.
  - Select the best pest control options that minimize risk to pollinators.



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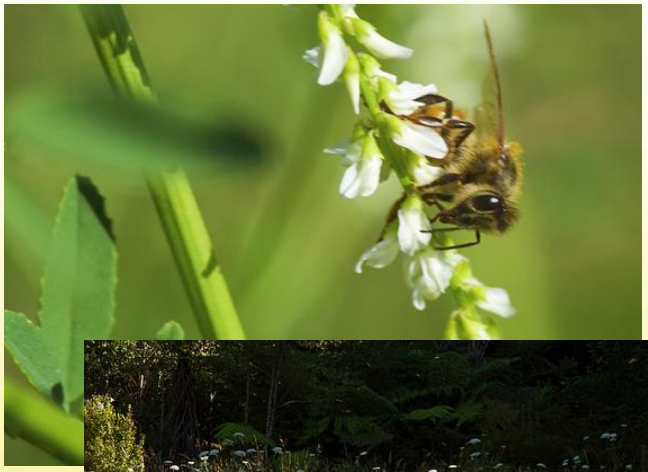
Before Application

- Know what is in the area of your application.
  - Plants/crops attractive to bees
  - Hives or nesting areas
  - Water sources
  - Foraging bees



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Before Application

- Read the pesticide label!
  - Choose formulations that are lower risk to pollinators.
  - Follow restrictions to protect pollinators.

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Toxicity Group (defined by EPA)	Precautionary statement (product HAS extended residual toxicity)	Precautionary statement (product has NO extended residual toxicity)
I: *acute* $LD_{50} \leq 2$ *mgr/bee*	This product is **highly toxic** to bees exposed to **direct treatment or residues** on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are **visiting** the treatment area.	This product is **highly toxic** to bees exposed to **direct treatment** on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are **actively visiting** the treatment area.

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Toxicity Group (defined by EPA)	Precautionary statement (product HAS extended residual toxicity)	Precautionary statement (product has NO extended residual toxicity)
II: *acute* LD_{50} *> 2 mgr./bee but <* *11mgr/ bee*	This product is **toxic** to bees exposed to **direct treatment or residues** on blooming crops or weeds. Do not apply this product if bees are **visiting** the treatment area.	This product is **toxic** to bees exposed to **direct treatment**. Do not apply this product if bees are **actively visiting** the treatment area.

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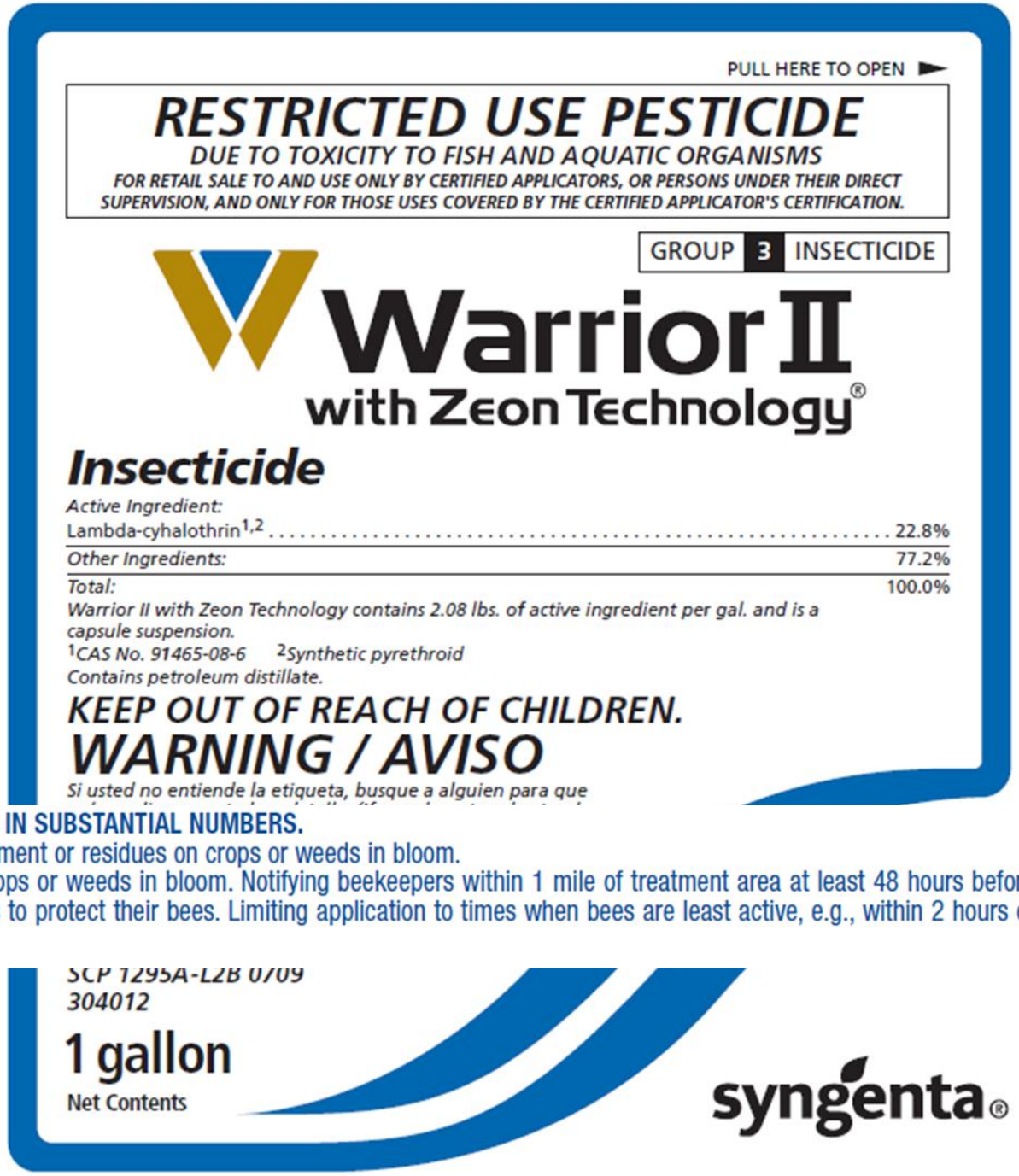
Some labels have warnings currently.



PULL HERE TO OPEN

RESTRICTED USE PESTICIDE

DUE TO TOXICITY TO FISH AND AQUATIC ORGANISMS

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS, OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

GROUP 3 INSECTICIDE

Warrior II
with Zeon Technology®

Insecticide

Active Ingredient:	
Lambda-cyhalothrin[1,2]	22.8%
Other Ingredients:	77.2%
Total:	100.0%

Warrior II with Zeon Technology contains 2.08 lbs. of active ingredient per gal. and is a capsule suspension.
[1]*CAS No. 91465-08-6* [2]*Synthetic pyrethroid*
Contains petroleum distillate.

KEEP OUT OF REACH OF CHILDREN.

WARNING / AVISO

Si usted no entiende la etiqueta, busque a alguien para que

BEE CAUTIÓN: 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.
For crops in bloom, do not apply this product to target 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 application to times when bees are least active, e.g., within 2 hours of sunrise or sunset, will minimize risk to bees.

SCP 1295A-L2B 0709
304012

1 gallon
Net Contents

syngenta®

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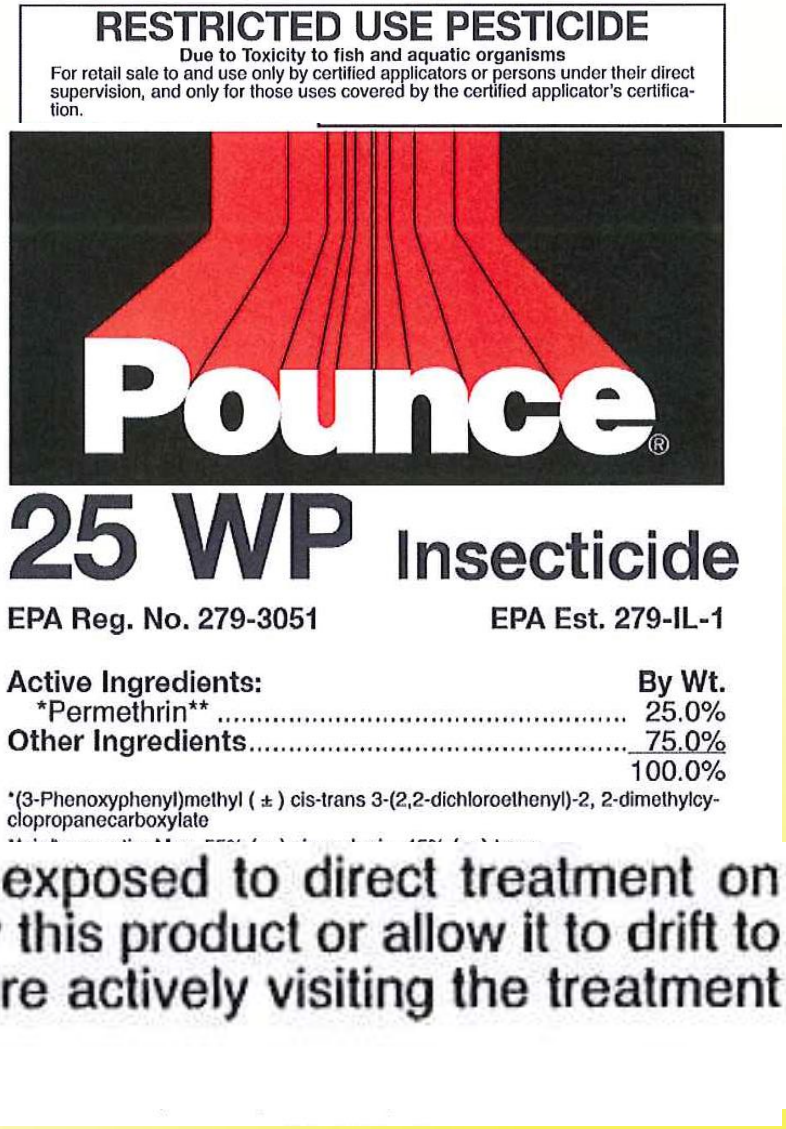
Less Toxic to Bees



RESTRICTED USE PESTICIDE

Due to Toxicity to fish and aquatic organisms

For retail sale to and use only by certified applicators or persons under their direct supervision, and only for those uses covered by the certified applicator's certification.

Pounce®

25 WP Insecticide

EPA Reg. No. 279-3051 **EPA Est. 279-IL-1**

Active Ingredients:	**By Wt.**
*Permethrin**	25.0%
Other Ingredients	75.0%
	100.0%

*(3-Phenoxyphenyl)methyl (±) cis-trans 3-(2,2-dichloroethenyl)-2, 2-dimethylcyclopropanecarboxylate

This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

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Certified Organic Safer?

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

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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.

SFA 50®

Triple Action Neem Oil

Broad Spectrum Fungicide/Insecticide/Miticide

Controls Fungal Diseases Including Black Spot, Mildews, Rusts, and Scab. Kills Mites and Insects Including Whiteflies, Aphids, and Scales.

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.

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.

cific Directions for use of this product are located
f label.
directions on side of label to open.

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)

0 51538 08722 3

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Before Application Practices

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Before Application

- Watch for the bloom!
  - Pollinators are more at risk when plants are blooming.
  - Plan for applications or delay applications until bloom is over.
  - Cover crops and weeds can be mowed to remove blossoms.

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Before Application

- Check the weather.
  - Check temperatures, humidity (dewpoint), and cloud cover.
  - Monitor wind speed and wind direction.
  - Pay attention to forecasts beyond application times

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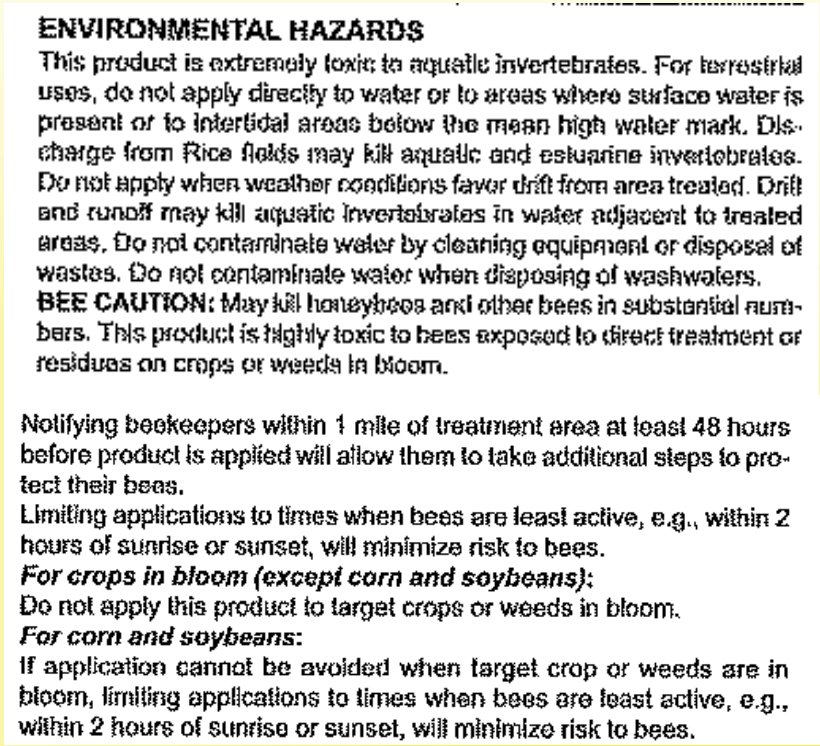
Before Application

- Use Residual Toxicity Safeguards.
  - Extended Residual Toxicity (ERT) of more than 8 hours have more risks to pollinators.
  - Think “Residual Activity”
  - Can harm bees that enter treated area (not just direct spray).



ENVIRONMENTAL HAZARDS

This product is extremely toxic to aquatic invertebrates. For terrestrial uses, do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Discharge from Rice fields may kill aquatic and estuarine invertebrates. Do not apply when weather conditions favor drift from area treated. Drift and runoff may kill aquatic invertebrates in water adjacent to treated areas. Do not contaminate water by cleaning equipment or disposal of wastes. Do not contaminate water when disposing of washwaters.

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.

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Before Application

- Communication with beekeepers.
  - Contact beekeepers if hives are in the area at least 48 hours prior to application.
  - If alfalfa seed operations are in the area, contact the grower to protect bees.

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During Application Practices

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During Application

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

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During Application

- Time application start to spray when bees are not active.
  - Late evening, evening, or morning hours after bees have returned to hives or nests.
  - Does not mean that there will be no bee damage!

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During Application

- Watch Spray Drift!
  - Use correct spray nozzles.
  - Use correct spray pressure.
  - Watch weather and environmental conditions.

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After Application Practices

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After Application

- Properly dispose of leftover tankmix, rinsates and wash waters.
  - Bee will be attracted to water sources.
  - Cover, drain, or dispose of any puddles or pools.
- Store unused pesticides in a secure facility.

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SUMMARY

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Protecting Pollinators

- Honey bee protection is primary concern for label changes.
  - Protecting all bees is necessary.
- Applicators must look at all spraying operations and what effect they may have on pollinators.
- Knowing where the bee houses or hives are and communicating with beekeepers and other growers is important!

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Protecting Pollinators

- Take care in choosing and applying pesticides when pollinators are present.
  - Formulation
  - Weather/environmental conditions
  - Sprayer set-up
  - Mixing and cleaning operations

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Questions?