

Developing Best Management Practices (BMPs) for Your State/Tribal Managed Pollinator Plans (MP3s)

A wide-angle photograph of a vast field of red flowers, likely clover, stretching towards the horizon. In the middle ground, a large, leafy tree stands prominently. The sky is bright blue with scattered white clouds. In the distance, there are some utility poles and a small structure. The overall scene is a rural, agricultural landscape.

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BMP Breakout Session - Outline

- Objectives
- Background
- Generic BMPs
- Specific BMPs - specific practices, crop-specific BMPs, ongoing efforts
- Current state – existing MP3s and developing BMPs
- Discussion –
 - use cards to write and hand in anonymous questions
 - *session material will be available online after the event*



Objectives:

- Provide an overview of Pollinator Protection BMPs, from 2010 to the present, as they have moved from the generic, to the more specific.
- Generate discussion and identify perspectives on what BMPs a state, tribe, commodity, or user group may have to better balance diverse needs related to pollinator and crop protection.

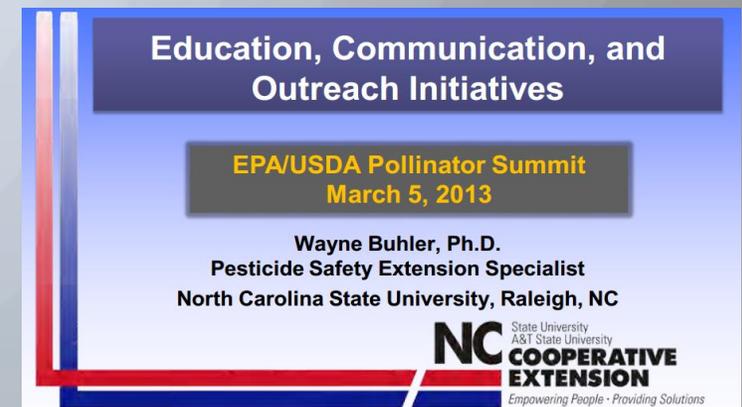
Background

- Best management practices serve as voluntary measures for reducing exposure to non-target organisms.
- BMPs are flexible (responsive to a user's needs) and are key to a dynamic approach for pollinator protection.
- The need for, and development of, pollinator protection BMPs will differ depending upon multiple variables, such as crop, region, user group, pest pressures and pollinator needs.

Early Efforts: Generic BMPs

Generic BMPs: most measures to protect pollinators were non-specific.

- 2011 – 2012: The need and importance of BMPs to protect pollinators was articulated by the Pesticide Program Dialogue Committee.
- Examples of Generic BMPs:
 - Avoid bee-toxic pesticides during bloom or apply softer compounds when bees are not foraging;
 - Minimize drift to reduce exposure in adjacent areas where bloom may be occurring;
 - Provide clean water for bees when crops are in bloom;
 - Communication between growers/applicators and beekeepers.
- Early Effort to Bringing Together Existing Resources
 - *How to Reduce Bee Poisoning*. L.Hooven et. al.
 - *Protecting Honey Bees from Pesticides*. M.Sanford



Identifying Specific BMPs: Pesticide Dust Reduction

Summit on Pesticides and Dust Reduction to identify management approaches for fugitive dust.

- EPA recognized: (i) the importance and prevalence of seed treatment as an application method and, (ii) the potential exposure pathway that fugitive dust represents.
- March, 2013, EPA and USDA brought different stakeholders together and mediated an exchange of information and efforts that are aimed at reducing exposure associated with pesticide treated seed. Four areas of engagement:

1. *Stewardship Manual for Using Pesticide Treated Seed*

- The American Seed Treatment Association (ASTA) in collaboration with Crop Life America (CLA) developed a guide for *Seed Treatment Stewardship*.
 - Contains sections on safe use, environmental stewardship, selection of products, seed-applied technologies (SAT), storage and the planting of commercially treated seed.



Identifying Specific BMPs: Pesticide Dust Reduction

2. Pollinator Partnership Corn Dust Research Consortium investigating uncertainties associated with dust-off.

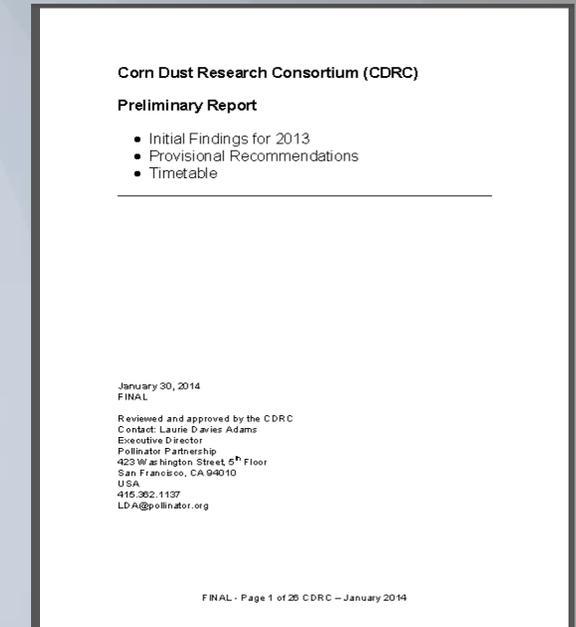
- Research into additives and their effect to reduce dust drift.
- Recommendations to reduce dust.

3. Development of an alternative lubricants (e.g., polyethylene wax) to replace current lubricants and reduce potential abraded seed coat dust.

- Supported by major equipment manufactures (Deer, Kinze, others); available at retail outlets.

4. International Standards Organization (ISO) report on Minimization of the Environmental Effects of a Fan Exhaust from Pneumatic Systems

- ISO 17962:2015, used research produced by the Julius-Kuhn Federal Research Institute of Germany



Identifying Specific BMPs: Toxicity of Residues on Foliage (RT₂₅)

Further the objective of “avoiding bee-toxic pesticides during bloom”

- In response to stakeholder requests, EPA has collated and posted RT₂₅ data submitted to EPA.
- Residual time of a compound (technical or end-use product) is based on multiple factors such as application rate; physical-chemical properties; dissipation; test matrix; and formulation.
- Result is variability between formulations, across rates, and within a formulation.

Residual Time to 25% Bee Mortality (RT₂₅) Data

On this page:

- [RT₂₅ Data: What They are and Where They Come From](#)
- [About the RT₂₅ Data Table](#)
- [OPP Residual Time to 25% Mortality \(RT₂₅\)](#)
- [Footnotes](#)
- [Definitions](#)
- [References](#)

RT₂₅ Data: What They are and Where They Come From

The residual time to 25% mortality (referred to as the RT₂₅) values provided in the table below were compiled from registrant-submitted data submitted in order to fulfill the data requirement for *Honey Bee (Apis mellifera) Toxicity of Residues on Foliage* study (OCSPF Guideline 850.3020²). This study may be conditionally required if the honey bee acute contact (or oral) median lethal dose (LD₅₀) value (obtained from a honey bee acute toxicity test such as OCSPF Guideline 850.3020²) is less than 11 µg/bee¹.

The honey bee toxicity of residues on foliage study is a laboratory test designed to determine the length of time over which field weathered foliar residues remain toxic to honey bees, or other species of terrestrial insects. The test substance (e.g., a representative end-use product) is applied to crop foliage; the foliage is harvested at predetermined post-application intervals (i.e., aged residues), and test adult bees are confined on foliage with aged residues for 24 hours. Three treatment intervals (different durations of time that residues are aged between application and harvest) are typically used (e.g., 3, 8 and 24 hours post-application). At a minimum, the test substance should be evaluated at the maximum application rate specified on the product label. If mortality of bees exposed to the foliage harvested 24 hours after the application is greater than 25%, bees should continue to be exposed to aged residues on foliage samples collected every 24 hours (i.e., 48, 72, 96, 120 hours, etc. after the application) until mortality is 25% or less.

About the RT₂₅ Data Table

The table below represents all available RT₂₅ values from studies submitted to the Agency which have undergone quality assurance reviews to ensure that the data are scientifically sound. Depending on the chemical tested, either the technical grade active ingredient or a specific formulation was tested using either the honey bee, alfalfa leaf cutting bee, or alkali bee; the table lists the test material and species tested. The table also denotes the plant species on which residues were aged.

RT₂₅ values are a function of a number of factors including application rate, physical-chemical properties, dissipation, crop, and pesticide formulation. Thus, there is considerable variability in RT₂₅ values within a single formulation, between formulations, between crops, and across application rates. The values included in the database are chemical and formulation specific. There are limited RT₂₅ values available in the table below for the numerous pesticide/formulation/use combinations. This table shows all the data submitted to the Agency that meets the EPA's quality assurance criteria. EPA plans to update this table as a more robust data set becomes available.

OPP Residual Time to 25% Mortality (RT₂₅)

Active Ingredient	Formulation ² (% a.i.)	Application Rate	Crop ³	Qualifier ⁴	RT ₂₅ (Hours)	Test Species Name ⁵ Common (Scientific)
L 675		0.0016 lb a.i./tree	citrus	--	60	
		0.0008 lb a.i./tree		--	41.5	
		0.0008 lb a.i./tree		--	30	
		0.0003 lb a.i./tree		<	8	

RT₂₅ Website:

<http://www.epa.gov/pollinator-protection/residual-time-25-bee-mortality-rt25-data>

Advancing BMPs – Identifying Crop Specific BMPs to Promote Both Pollinator Protection and Crop Production

In order to identify crop-specific BMP needs, USDA and EPA first investigated *the status and extent of pollinator protection BMPs that currently exist.*

- 2014, USDA released the report, *Securing Pollinator Health and Crop Protection: communication and adoption of farm management techniques in four crops*, (Pollinator Partnership)
 - Almond, apple, melon, and corn.
 - Needed more work to better understand what management practices balance both crop production and pollinator protection.
- Website for Securing Pollinator Health and Crop Protection:
<http://pollinator.org/PDFs/SecuringPollinatorHealthCropProtection.pdf>



Securing Pollinator Health and Crop Protection:
Communication and Adoption of Farm Management Techniques in Four Crops

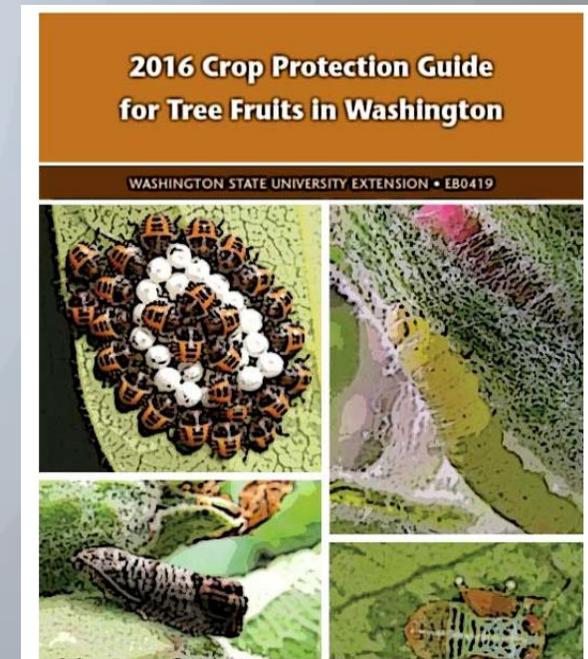
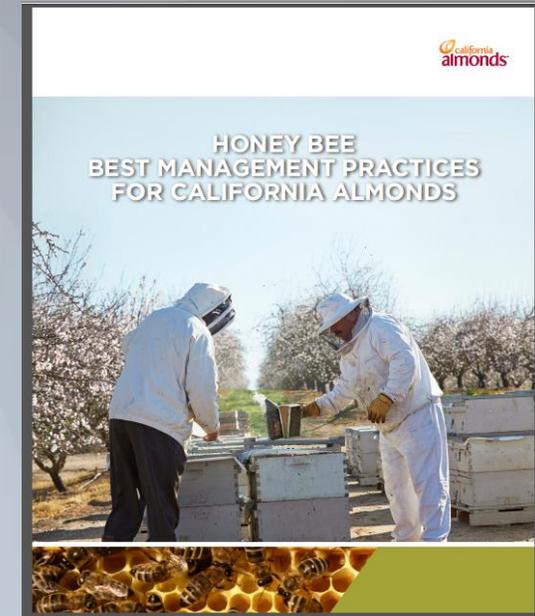
Crop-Specific BMPs – almond, apple

Almond

- Newsletter and Information from Extension
 - information on “bloom caution”; pollination timing and cautions to protect bees; reminders about pollination contracts;
 - Honey Bees and Agricultural Sprays – Mussen E. 2014
- Publications on BMPs
 - Honey Bee Best Management Practices for California Almonds
<http://www.almonds.com/pollination?from-section=2881#tc-BeeBMPs>

Apple

- Fewer specific publications for apple production and pollinators



Advancing Specific BMPs – Crop Specific Needs to Promote Both Pollinator Protection and Crop Production

Applying the approach from the 2014 effort with the National IPM Centers to help identify specific BMP needs for pollinated crops.

IPM Centers

- Central role in promoting pollinator protection and crop production.
- Centers are well equipped to collect and disseminate information.
- Working with the Centers to further investigate the current status and need for information, and practices for pollinator BMPs.
- Starting with crops that rely upon honey bee pollination services.
- Objective: on a crop specific level:
 - identify existing BMPs and make that information available;
 - identify information needs that can be pursued with future research/testing .



Advancing Specific BMPs –

Crop Specific Needs to Promote Both Pollinator Protection and Crop Production

Applying the approach from the 2014 effort with the United Soybean Board and the Honey Bee Health Coalition to help identify specific BMP needs for pollinated crops.

Soy BMP Initiative

- HBHC, United Soybean Board, USDA and EPA are developing a effort to collaboratively identify pollinator BMPs for soybean.
- Not a pollination dependent crop
 - Actions that are specific to soy production
 - Can be modified for regional purposes, if needed
 - Potentially identify practices/information that can be pursued with future



**HONEY BEE
HEALTH
COALITION**

Existing State Plans: (2016): BMPs Identified to Minimize Risk of Pesticides

BMP's include:

- notifications and communication guidelines
- hive locations, identification, and moving
- label interpretations and guidance
- product formulation, application recommendations
- adoption of IPM and crop advisors
- bee-kill reporting
- safe use of in-hive pesticides
- maximizing pollinator health
- outreach “spreading the news”



Creating BMPs: Consider Target Audiences



Discussion Questions:

- **What are the target groups or target crops that are the primary concerns for your state, Tribe?**
 - Commercially pollinated crops; crops with high acreage;
 - Beekeepers, growers, applicators, homeowners, etc?
- **Are there existing BMPs that protect pollinators for that/those crop(s)?**
 - Are they being implemented, if not why?
- **What management or production practices – *either inside or outside the bloom period* - may have an impact on pollinators?**
- **Are there BMP gaps that can be explored to better balance production and management practices and pollinator protection?**

Discussion Questions:

- **Considering different BMP practices for different groups/areas?**
 - Native pollinators, ornamentals, public?
 - What is and is not feasible to address/adopt in an MP3?
- **Is there good adoption of existing practices, how to promote adoption of BMPs?**
 - *i.e.*, resources from academia, government, *etc.*
- **Are the BMPs fully vetted?**
 - Industry, academia, government input/buy-in?
- **What challenges are faced when implementing BMPs?**
 - Time, resources, outreach, *etc.*

Disseminating BMPs: Potential Outlets

- **What partnerships can assist in identifying, developing and disseminating BMP information?** (*e.g.* crop specialists, entomologists, IPM Centers, university extension, commodity groups, etc.).
 - Forging relationships between stakeholders and work from a common goal.
 - Disseminating BMPs: IPM Centers; internet, social media, webinars, deliverables, presentations, lectures, trainings, *etc.*
 - Are there, or can there be, stakeholder agreements regarding forage access to support pollinator health?
 - Is data tracking considered?
 - important for measures and evaluations

Wrapping up:

- Take home messages
- Unresolved issues



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Some Sources of Existing Information

- How to Reduce Bee Poisoning from Pesticides, Hooven *et al.* 2013 (http://pesticidestewardship.org/PollinatorProtection/Documents/How%20to%20Reduce%20Bee%20Poisoning%20from%20Pesticides_PNW.pdf)
- Protecting Honey Bees from Pesticides, Krupke *et al.* 2014 (<https://extension.entm.purdue.edu/publications/E-53.pdf>)
- California Almond Board “Honey Bee BMP’s for California Almonds” (www.Almonds.com/BeeBMPs)
- Pesticide Environmental Stewardship website: (<http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>)
- Conserving Pollinators: A Primer for Gardeners (<http://articles.extension.org/pages/19581/conserving-pollinators:-a-primer-for-gardeners>)
- Operation Pollinator (Syngenta) (<http://www.operationpollinator.com/>)
- Bayer Bee Care(Bayer) (www.beecare.bayer.com)
- National Pesticide Information Center – Pesticides and the Environment, Backyard Beekeepers (<http://npic.orst.edu/envir/yardbees.html>)