

Protecting Pollinators Through Good Stewardship Practices

A compendium of guidelines and other documents supporting
pollinator stewardship

Version 2
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Introduction

The employment of stewardship practices to protect pollinators is not new. Recommendations on pesticide use and management have been developed and implemented by pesticide users for many years. In 1964, *Pesticides and the Living Landscape* was first published suggesting good practices to protect pollinators, such as varying the timing of applications and avoiding use of some chemicals during the pollination period. This is because crop protection products, while effective in controlling a range of pests, are also toxic to pollinators. However, through good stewardship practices the risks posed by their use can be minimized or eliminated.

While recently reported declines in some pollinators cannot be attributed to any one cause, crop protection companies, farmers, beekeepers, scientists and the public can and should work together to reduce the risks and help to protect pollinator health. This compendium identifies a variety of guidelines and documents supporting pollinator stewardship directed at farmers, beekeepers and advisors.

Recommended Stewardship Actions for Pollinators

The following stewardship practices are recognized by a range of stakeholders for protecting pollinators, including the crop protection industry, government agencies, universities and bee-keeper organizations.

- **Apply pesticides within an Integrated Pest Management (IPM) program.** Only use pesticides when necessary; for sprays consider spot spraying (only applying to infested areas).
- **Follow the pesticide label.** Use the recommended dose; avoid drift of sprays and dusts; do not apply in windy conditions or when there is a danger of drift onto non-target areas.
- **Use a genuine product.** Counterfeit and illegal pesticides have unknown impacts¹.
- **Minimize dust from treated seed.** Pour treated seeds carefully out of bags; do not shake dust or loose material from the bag; use properly calibrated and maintained seeding machinery that minimises dust; use recommended additives; avoid spillage of seed; clean up spills; dispose of bags and other waste (included unused seed) properly; avoid contamination when cleaning equipment.
- **Avoid spraying when bees are foraging.** Minimise sprays during flowering.
- **Avoid contamination from spray liquids.** Use drift-reduction application equipment that is properly maintained and calibrated, care when mixing and loading, properly dispose of waste and used material; clean up all spills; avoid contamination when cleaning equipment.
- **Improve pollinator habitats.** Plant flower borders, maintain hedgerows and unsprayed headlands.
- **Inform and demonstrate good practices to farmers.** Farmers inform beekeepers of use.

¹ This is not mentioned in the literature reviewed, but is an important issue

- **Management of bees by beekeepers.** Ensure good hygiene; disease control; proper feeding; access to water; genetic diversity; move hives out of areas to be sprayed.

Compendium:

Title: *Pollinators and agriculture: Agriculture productivity and pollinator protection*

Authors: European Landowners' Organization (ELO), European Initiative for Sustainable Development in Agriculture (EISA), European Crop Protection (ECPA)

Link: http://www.europeanlandowners.org/files/pdf/2013/Pollinators%20brochure_B%EF%BF%B DT2.pdf.

Summary: This report looks at the important relationship between pollinators and European agriculture, with a focus on the safe and sustainable use of pesticides, and best management practices for sustainable productive agriculture. Specific stewardship recommendations include:
For foliar applied pesticides:

- Restricting pesticide applications to the evening, to avoid the flight period of the honey bee.
- Selecting spraying periods to avoid spraying crops whilst flowers are in bloom
- Limiting the application rate of plant protection products.
- Use of drift reducing technologies to avoid deposition of spray drift onto nearby flowering areas (e.g. adjacent to crops in bloom).
- Removing flowering weeds from cropped areas prior to application.

For seed treatment:

- Facilities must apply state of the art techniques in order to ensure that the release of dust during coating, storage, and transport can be minimised.
- Facilities should register to a 'quality assurance' program that is independently audited, to assure compliance with legal requirements and industry guidelines. Only these facilities should be considered 'professional facilities'.
- The quality assurance program should include professional training and procedures to continuously assure best practice.

Title: *Pollinator Protection*

Author: Center for Integrated Pest Management

Link: www.pesticidestewardship.org/pollinatorprotection/Pages/default.aspx

Summary: This website is part of a larger program *Pesticide Environmental Stewardship* supported by the Center for Integrated Pest Management. This site emphasises the use of Integrated Pest Management and Best Management Practices to prevent harming honey bees, their food sources, water and habitat. Subjects covered include:

- Honey Bees and Beekeeping
- Bees in Peril
- Pesticide Toxicity to Bees
- Read and Follow the Label
- Pesticide Applicator Best Management Practices
- Seed Treatment concerns
- Beekeeper Best Management Practices
- Cooperate and Communicate
- Recognizing and Reporting Bee Kills

- There are also sections on resources, suggested readings and presentations.

Title: *Pollinators and Pesticide Stewardship: Protecting Pollinators on Farms and Urban Landscapes*

Authors: Coalition for Urban/Rural Environmental Stewardship, Bayer CropScience, Syngenta

Link: <http://www.pesticidestewardship.org/Non-target/Documents/Pollinator%20Brochure%20Oct%202012.pdf>

Summary: This guideline covers application of liquid pesticide formulations and seed treatments. The sources of the information are quoted as pollinator experts, pesticide labels and other sources; particularly *Protecting Honey Bees from Pesticides* by the Alabama Cooperative Extension (www.aces.edu/pubs/docs/A/ANR-1088/#) and *Protecting Honey Bees from Pesticides* by the University of Florida (www.edis.ifas.ufl.edu/AA145). Topics covered include:

- Read and Follow All Pesticide Label Directions and Precautions
- Determine if the Pesticide May Be Toxic to Pollinators
- Understand Local Pollinator Visitation Habits
- Use an Integrated Pest Management Approach
- Always Follow Good Pesticide Stewardship Practices
- Minimize Spray Drift
- Minimize Vapour Drift
- Minimize Off-Site Drift of Seed treatment Materials
- Cooperate and Communicate with Others Who are Concerned About Preserving Beneficial Insects, Including Pollinators
 - Grower and Commercial Beekeeper Cooperation
 - Grower and Aerial Applicator Cooperation
 - Know the Common Symptoms of Honey Bee Exposure to Pesticides and What Other Stressors Impact Bee Health
 - Check for Specific Local Ordinances Pertaining to Pollinators, Especially Beehive Locations or Designated Preserves

Title: *The Guide to Seed Treatment Stewardship*

Authors: American Seed Trade Association, CropLife America

Link: www.seed-treatment-guide.com

Summary: This web-based guide was jointly produced by the American Seed Trade Association and CropLife America, with input from seed companies, seed treatment providers and universities. It is designed to provide farmers, applicators and seed companies with up-to-date guidance for managing treated seeds effectively to minimise the risk of exposure to non-target organisms. The Guide covers the following subject areas/modules:

- Safe Use of Seed Treatment Products and Safe Handling and Transport of Treated Seed
- Environmental Stewardship
- Selection of Treatment Product
- Commercial Application of Seed Applied Technology
- Treated Seed Labelling
- Storage of Seed Treatment Products and Treated Seed
- Planting of Commercial Treated Seed

All modules can be downloaded as PDFs. Additional stewardship material that can be downloaded for farmers and applicators include:

- Key Stewardship Principles for Seed Treatment Application

- Seed Treatment Application Best practices
- Operation Pollinator brochure
- Planting Treated Seed

Title: *Protecting Pollinators*

Author: CropLife Canada

Link: <http://www.croplife.ca/protecting-pollinators>

Summary: This website provides recommended best practices for seed treatments and includes guidance in both a presentation format and video. Stewardship areas covered include:

- Best Management Practices for Growers
- Corn Planting Equipment

Additional resources available on the site include:

- Protecting pollinators: The responsible use of treated corn seed (www.croplife.ca/wp-content/uploads/2013/02/BMP-one-pager-updated_Feb-11-2013.pdf) a one page leaflet (in English and French), which covers:
 - Awareness of hive locations
 - Control of weeds in the field prior to flowering and before planting
 - Use of appropriate equipment to avoid drift
 - Monitor environmental conditions
 - Handle seed carefully to avoid dust
 - Proper disposal of empty seed bags
 - Provide pollinator-friendly habitats away from the field
- Pollinator Stewardship, a one page statement on the issue (in English and French).
- Some Facts about Honey Bee Health and Pesticides, a two page briefing on the issue.

Title: *Pesticides and Pollinators*

Author: Maine Board of Pesticide Control

Link: <http://www.maine.gov/dacf/php/pesticides/documents2/presentations/2014AgTradesShow/Pollinator%20protection%20for%20growers.pdf>

Summary: The presentation from the Maine Board of Pesticide Control covers the issue of pesticide impacts on pollinators and includes some stewardship recommendations for beekeepers:

- Minimize bees' exposure to toxins through moving or closing hives, timing of treatments for miticides and replacing beeswax combs.
- Liaise/coordination between pesticide users (in bee forage areas) and bee keepers (e.g. encourage not to spray during bloom).
- Encourage growers to plant buffers of blooming plants for pollinators.

Title: *Bee Health*

Author: Agricultural Industry Support

Link: <http://tpsalliance.org/index.php?id=197>

Summary: This web page provides links to the efforts of The Pesticide Stewardship Alliance (TPSA) member companies, the US Environmental Protection Agency and agricultural organizations in maintaining bee health through safe stewardship practices. Links included are:

- EPA Pollinator Bee Advisory Box <http://www.epa.gov/pesticides/ecosystem/pollinator/bee-label-info-lrt.pdf> contains instructions for labelling products and includes the following advice:
 - For contracted pollinator crops: Do not apply when bees are foraging (or remove hives).

- For other crops attractive to pollinators: do not spray when bees are foraging and while the crop is flowering (includes conditions when application may be necessary).
- Non-agricultural products: do not apply while bees are foraging or flowering.

Title: BEEHAVE

Authors: Multi-authors from (mainly) academia and industry and funded by the UK's Biotechnology and Biological Sciences Research Council.

Link: <http://beehave-model.net>

Summary: This is a free on-line model of honeybee colony dynamics and foraging that allows the user to explore multifactorial causes of colony failure. A description of the model and its use is also given in a paper published in the *Journal of Applied Ecology*, which is available on-line (<http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12222/full>). Although the paper and model does not describe or simulate stewardship practices, it does allow simulation of pesticide impacts (through increase mortality) and interactions with other factors such as food availability, as well as impacts of pests and diseases (e.g. Varroa mite) and their control. Thus, the impact of stewardship practices on pesticide use (which would reduce mortality impacts) and good bee-keeping practices (that would improve food availability, reduce diseases etc.) can be predicted.

Company Resources:

Bayer CropScience Bee Care (www.beecare.bayer.com) includes information on pollinators and agriculture, a description of the Bee Care Program that promotes understanding and solutions for bee health, including protection from pests, and Bayer's commitment to stewardship.

Syngenta Operation Pollinators (www.operationpollinator.com) describes Syngenta's programme to encourage growers to develop new habitats that support and encourage pollinators.

Monsanto Honey Bee Health (www.monsanto.com/improvingagriculture/Pages/honey-bee-health.aspx) describes Monsanto's collaborative activities to provide more foraging areas for bees and ways to protect hives from pests and diseases.