

Protecting Pollinators Through Good Stewardship Practices

A compendium of guidelines and other documents
supporting pollinator stewardship

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Introduction:

The crop protection industry recognizes the vital role pollinators play in global food production and the need to protect pollinator health. As such, the industry is committed to support research into pollinator health and to promote farming practices that support the health of pollinators. 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.

The employment of good stewardship practices to protect pollinators is not new, this has been both recommended and practiced for many years e.g. 'Pesticides and the Living Landscape' first published in 1964 suggests varying the timing of applications and avoiding use of some chemicals during the pollination period. This because crop protection products while effective in controlling a range of pests in many cases also are intrinsically toxic to pollinators; however, through good stewardship practices the risks posed by their use can be minimized or eliminated. The following paper lists the current stewardship approaches and references where these are described in further detail. These cover foliar and seed treatments and are directed at growers, bee-keepers 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
 - Whenever possible, prefer the product with the most pollinator-friendly toxicity profile
 - Only treat the target area
 - Shut off sprayers when turning at field ends or near environmentally sensitive areas
 - Shut off nozzles if there are gaps in the crops
- ✓ **Always read the pesticide label**
 - Follow label instructions
 - Alert authorities of counterfeit pesticides
- ✓ **If the label indicates the product may be toxic to bees**
 - Coordinate with nearby beekeepers over plans to spray and take appropriate protective measures
 - Avoid spraying when plants are in bloom
 - Consider that application in the early morning or evening when bees are less likely to be foraging can further reduce the potential exposure of pollinators
 - Be mindful that bees may still be present from nearby forage even if the crop you are spraying is not attractive to bees
- ✓ **Minimize drift and contamination**
 - Use low drift nozzles if possible and calibrate spray equipment regularly

- Avoid spraying in windy conditions
- Minimize dust from treated seed by carefully pouring it out of bags and using planting machinery that eliminates the production of dust

Compendium of guidelines and other documents supporting pollinator stewardship:

Title 1: *Pollinators and agriculture: Agriculture productivity and pollinator protection*

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

Link: <http://www.europeanlandowners.org/files/pdf/2014/Pollinators%20brochure%20-%20PDF%20FULL.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:

- If the label indicates the product may be toxic to bees, consider that application in the early morning or evening when bees are less likely to be foraging can further reduce the potential exposure of pollinators.
- Crop protection products should be applied at the exact rate indicated.
- 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 minimized.
- 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 2: *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 emphasizes 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 3: *Pollinators and Pesticide Stewardship: Protecting Pollinators on Farms and Urban Landscapes*

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

Link: <https://pesticidestewardship.org/pollinator-protection/>

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/#).

Title 4: *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 America 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 minimize 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 5: *Protecting Pollinators*

Author: CropLife Canada

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

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.
- Best management practices for foliar application http://www.croplife.ca/wp-content/uploads/2014/02/CropLife-foliar-BMPs-one-pager_WEB-2.pdf

Title 6: 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 7: 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-irt.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

Driftwatch managed by FieldWatch and developed by Purdue University (<https://driftwatch.org/>). This on-line application maps 'sensitive sites' (mainly specialty crops and beehives that are located near an entered GPS position. It allows pesticide applicators to be aware of possible drift hazards and facilitates dialogue between growers, beekeepers and pesticide applicators. It is currently in operation in 12 states in the US and one in Canada.

Title 8: Pollinator Protection Initiative

Authors: CropLife Australia

Link: <http://www.croplife.org.au/industry-stewardship/ppi/>

Summary: This is an initiative by CropLife Australia that provides resources on responsible use of crop protection products in a manner that minimizes risk to pollinators. Two themes are currently covered: BeeConnected (see next bullet item below) and Seed Treatment Stewardship Strategy. The Seed Treatment Stewardship Strategy (<http://www.croplife.org.au/wp-content/uploads/2014/08/CropLife-Seed-Treatment-Stewardship-Strategy-LOW-RES.pdf>) consists of four stewardship and best practice guides:-

- Seed treatment product manufacture stewardship guide: A guide for manufacturers of seed treatment products
- Seed treatment product application guide: A guide for on- and off-farm applicators of seed treatment products
- Treated seed planting guide: A guide for farmers and contractors handling and sowing treated seed
- Best management practice guide for planting insecticide treated seed: A guide for those involved in planting insecticide treated seed to minimize the risk to pollinators

These guides outline measures to reduce risks from dust generated during handling and planting of treated seed (including reducing dust generation itself) and provide guidance on industry best practices to minimize off-target movement of crop protection products. The first three guides cover all seed treatments, whereas the last guide focuses on insecticides and minimizing pollinator impacts.

Another element of the Pollinator Protection Initiative is **BeeConnected** (www.croplife.org.au/beeconnected) developed by CropLife Australia in partnership with the Australian Honey Bee Industry Council. This is a smart phone application that allows beekeepers to log the location of their hives (along with any additional notes). Farmers can register the location of their properties and they, or spray contractors, can log the location and timing of the use of crop protection products (along with any additional notes). Bee keepers are notified of crop protection activities within 10km of their hives, and farmers/spray contractors of hives within 10km of their crop protection activities, users can also explore maps of showing this information (although beekeepers cannot see the location of other beekeepers and farmers/spray contractors cannot see the activities of other farmers/spray contractors' activities). Other information can be shared through BeeConnected's messaging service.

Title 9: Bee Safe Bee Careful

Authors: UK Crop Protection Association

Link: http://www.cropprotection.org.uk/media/1049/bee_safe_bee_careful.pdf

Summary: Produced by the UK's Crop Protection Association, in partnership with the British

Beekeeper’s Association, Royal Horticultural Society, and the Horticultural Trades Association, describes good management practices for insecticides in the home and garden market. Good practices for protecting bees are described, including:

- Always read the product label and follow the instruction exactly
- Do not spray when bees are about; it is generally better to apply early in the morning or evening when bees are less active
- Do not directly spray open blooms
- Do not spray lawns when weeds are in flower; mow first to remove flower heads

Title 10: *Accredited Seed Treatment Operation Standards*

Authors: Agrichemical Warehousing Standards Association and supported by CropLife Canada

Link: <http://awsa.ca/accredited-seed-treatment-operation-standards/>

Summary: These standards and accreditation have been available since 2014 and cover open and closed fixed, and mobile treatment facilities. Aimed primarily at human and environmental safety, the standards ensure correct handling, labelling and storage of treatment products and that seed are properly treated. From 2017 only accredited operators will be eligible to receive and apply designated seed treatment products. In Europe, quality assurance schemes for seed treatment have been developed and are in operation, for example the European Seed Treatment Assurance Scheme, ESTA (<http://esta.euroseeds.eu/>) managed by the European Seed Association and similar private standards. Seed treatment facilities are audited through independent auditors. These are aimed at safety and ensuring that seeds are properly treated and do not cause excessive dust production during handling and planting.

Case Studies:

The following case studies demonstrate how the above stewardship practices are being put into action in the field.

Use of flow lubricant in Canada: In 2014, all Canadian farmers planting corn or soybean seed treated with neonicotinoid insecticides used a new “flow lubricant” to reduce dust and minimize potential risk of exposure to foraging honey bees and other pollinators. The product, Fluency Agent, is designed to replace standard talc and graphite seed lubricants. The aim is to reduce the potential for abrasion that produces insecticidal seed dust. Although there is already a low level of potential for pollinators to come in contact with dust from treated seed during planting, Fluency Agent offers added protection. That’s why the Canadian government mandated all farmers use it this season. In laboratory tests, the lubricant was shown to reduce total dust released by treated seeds by 90 percent versus talc and 60 percent versus graphite. In 2013, extensive field trials with the product were conducted on more than 40,000 farm acres in the United States and Canada; the majority of growers said the product was equal to or better than traditional seed lubricants.

The inclusion of an (air) deflector in seed drilling treatment has also been shown to dramatically reduce drift of air-borne dust. Leading pesticide manufactures have advocated for some time that the use of deflectors on seed drilling machinery should be mandatory, as it is in several European countries.

BeeConnected: CropLife Australia partnered with the Australian Honey Bee Industry Council and with support from national farming organizations launched a smartphone application that helps farmers and beekeepers coordinate their activities throughout the country. The first app of its kind in the world, BeeConnected enables two-way communication between farmers and beekeepers while maintaining personal privacy via an in-app messaging system. Around one thousand pesticide users and beekeepers have already signed the BeeConnected App in Australia. The App has also been bought by CropLife Canada and CropLife Asia, with the later working with CropLife India and Indian Agricultural Research Institute to test the App in Pune, Maharashtra State. For more information, and to download the app, visit www.croplife.org.au/beeconnected

OECD: The OECD has launched a publically available website, developed by its Working Group on Pesticides. Managing Pesticide Risk to Insect Pollinators (ENV Risk Mitigation Pollinators) website (<http://www.oecd.org/chemicalsafety/risk-mitigation-pollinators/>) was developed following a survey of OECD member counties and is intended to provide a central location for information about the regulatory approaches adopted by OECD member countries to mitigate pesticide risks to insect pollinators. Risk mitigation is divided into three categories:

- Pesticide Labelling
- Non-label Mitigation
- Education and Training

Details of the approaches taken by 11 countries (Australia, Belgium, Canada, Germany, Ireland, Japan, Netherlands, Slovak Republic, Switzerland, United Kingdom and the United States) are provided, with links, under the section Laws, Policies and Guidance. These include precautionary labelling, use restrictions, technologies, training materials, Best Management Practices (BMP) and Integrated Pest Management (IPM) practices.

Pollinator habitat enhancement:

The following are examples of initiatives by companies to enhance pollinator habitats and health:

Syngenta Operation Pollinator (www.operationpollinator.com) describes Syngenta's program 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.

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.

Bayer also presented on 'Addressing Concerns Around Bees: an Industry Approach' at TPSA's 2013 conference (http://tpsalliance.org/pdf/conference/2013/Iain_Kelly_2013-01-30_TPSA%20Final.pptx)