

Leading the Vision

Stewardship in the Crop Protection Industry

CropLife
INTERNATIONAL 

Pollinator Protection Vital to Crop Production



The honey bee is one of the most important insect pollinators on the planet.

[Pollinators](#) are vital for a thriving agricultural sector. One-third of the crops we consume depend to some extent on [insect pollination](#) for reproduction, including [almonds](#), apples, berries, cucumbers, melons and [many more](#). In fact, the total economic value of insect pollination worldwide is estimated to be [more than \\$200 billion](#) and accounts for around 10 percent of agricultural production.

Bees, butterflies, beetles and other insects are natural pollinators that play a role in agriculture but honey bees are arguably the most important. Keeping these hard-working insects healthy is essential not only to grow crops but also to ensure farmers can turn a profit and ultimately, help feed the world.

Reports of honey bee losses across the Northern Hemisphere, especially in parts of [Europe](#) and [North America](#), have therefore been met with concern among all agricultural stakeholders. The crop protection industry recognizes the vital role that pollinators play in global food production. As a result, it has committed significant resources to investigating the causes of honey bee decline and helping farmers reduce their potential impact on all pollinators through good stewardship practices.

Causes of Concern

Scientists have not attributed honey bee decline to any one cause. Numerous factors affect honey bee health, including pests and diseases, management practices, weather, environmental conditions, agricultural practices, and availability and quality of food sources.

But it is the neonicotinoid class of crop protection products, widely used as seed treatments as well as for foliar applications, which are most popularly cited in the media for honey bee loss. [Introduced 20 years ago, neonicotinoids](#) are a family of insecticides chemically similar to [nicotine](#) that protect emerging plants from various pests. They are now the world's most widely used insecticide class. Campaigners argue that exposure to seed treatments is killing bees and this has led the European Union to [restrict the use of certain neonicotinoids](#). Others recognize that while it is important to reduce the exposure of bees to seed treatment dust, these treated seeds are a key part of agricultural production and provide significant benefits.

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Seeds treated with neonicotinoids prior to planting have reduced the amount of crop protection product spraying required for healthy crops. All neonicotinoids have been extensively tested to ensure that, when used properly, only target pests are impacted. Numerous field studies and real life examples show that bee health is not related to the use of seed treatments. For example, in Switzerland, the rate of

honey bee loss is the same at altitudes above 1,000 metres – where no crops are grown and no neonicotinoids are used – to the lowlands where neonicotinoids are used on intensive cropping. Meanwhile, in Australia, where neonicotinoids are used widely, the honey bee population has remained stable.

Still, the crop protection industry remains committed to reducing the potential risk posed to bees and other pollinators arising from the dust created during planting of treated seeds. As such, it continues to improve seed 

applications and planting technology to reduce the potential for such exposure and it promotes good stewardship among farmers.

Sweet on Stewardship

“Pollination is not just a free service but one that requires investment and stewardship to protect and sustain it,” noted the United Nations Environment Programme in its [2010 report on pollinators](#).

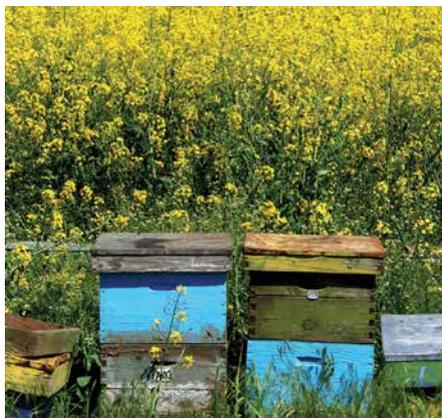


While very stringent [regulatory safeguards](#) are in place to ensure that crop protection products do not pose unacceptable risks to wildlife, good stewardship practices by the crop protection industry, farmers and beekeepers are necessary to help protect the health of pollinators. The industry is committed to educating farmers on best practices to minimize any risks to these beneficial insects. Farmers can improve and protect pollinator habitats in a variety of ways. Also beekeepers should monitor their colonies and protect them from mites and disease.

For decades, the crop protection industry, government agencies, universities and beekeeper organizations have promoted [good stewardship practices](#) among farmers to protect pollinators. Such practices include following instructions on crop protection product labels, only using genuine products, avoiding use of certain products during the activity of pollinators in the crop or under windy conditions, varying the timing of applications and planting flowers at field borders. Moreover, the use of modern applicators, such as nozzles that create spray droplets less affected by wind, help

keep crop protection products only where intended. With treated seed, farmers can minimize dust by carefully pouring seed out of bags, using properly calibrated and specialized seeding machinery, avoiding seed spillage, properly disposing of unused seed and bags, and regularly cleaning seed equipment. These and other practices can minimize or eliminate any risks to pollinators posed by crop protection products.

Another important way to protect pollinators is for farmers and beekeepers to communicate. Farmers can inform beekeepers when they are going to apply crop protection products to their fields so hives can be moved. Similarly, communication among all parties involved in protecting pollinators is critical. The [crop protection industry](#) is actively coordinating with organizations such as the [Honey Bee Health Coalition](#) and [Project Apism](#). These organizations aim to improve honey bee health through outreach, education and research.



Bite the Varroa Mite

The parasitic mite [Varroa destructor](#) has emerged as one of the most important reasons for further research. *Varroa* infestation weakens bee colonies, spreads among them and makes bees susceptible to bacterial and viral infections. The [U.S. Environmental Protection Agency](#) identified the *Varroa* mite as “the major factor underlying colony loss in the U.S. and other countries.”

Bee pathologist Denis Anderson agrees: “This [*Varroa*] is the most

Protecting Pollinators: Stewardship in Action



Australia Communicating to Keep Bees Healthy

Australia has one of the healthiest honey bee colonies in the world, and the crop protection industry aims to keep it that way.

Through its [Pollinator Protection Initiative](#) (PPI), CropLife Australia is providing resources to ensure that modern, innovative crop protection products are used responsibly and in a manner that minimizes risk to pollinators.

The latest project launched by the PPI is [BeeConnected](#), a world-first phone app that fosters communication between farmers and beekeepers to better protect pollinators. CropLife Australia launched the app in September 2014 in partnership with the Australian Honey Bee Industry Council.

The app notifies farmers and contractors when a registered beekeeper positions beehives near their crops. In turn, beekeepers receive alerts when registered farmers intend to use crop protection products.

Another project resulting from the PPI is CropLife Australia’s [Seed Treatment Stewardship Strategy](#), which advises farmers and seed treatment manufacturers about best management practices to handle and plant treated seed.





dangerous threat that we have of bees around the world.”

The crop protection industry has committed significant resources to researching *Varroa* mites and developing new crop protection products to help protect beehives from them.



Honey Bees Abuzz

In spite of the threats to honey bee health, and notwithstanding recent overwintering losses of honey bees in Europe and North America, population figures for 2013-14 have suggested an upturn in honey bee fortunes.

The honey bee research network COLOSS looked at nearly 400,000 bee colonies from 21 countries in Europe

and the Mediterranean and found 2013-14 colony losses to be 9 percent – the lowest level since COLOSS started collecting data in 2007.

In Canada and the U.S., overwintering honey bee losses have also declined this year, despite both countries experiencing a long, cold winter. Excluding Ontario, where losses were higher than normal, overwintering losses in Canada were down to 19.6 percent compared to an average of up to 40 percent. In the U.S., overall mortality dropped to an average of 23 percent compared to 30.5 percent for the 2012-13 winter.

While these latest global figures cannot be described as a genuine trend – that would require consistent declines over many years – they at least demonstrate the difficulty to draw simple conclusions of cause and effect on pollinator health.

It is also important to note that whatever the latest figures say on pollinator health, the crop protection industry is clear: it will continue to do all it can to ensure these busy pollinators can maintain their vital service to agriculture. 💧



Canada Cutting Dust with New Flow Lubricant

This year, 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 in 2014. A collaborative effort between grower groups, government and industry helped get information about the product to growers in advance of the 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.

CropLife Canada and the Canadian Seed Trade Association are helping spread the word about this and other [best management practices](#) for protecting pollinators. ⬇

TOP 10 WAYS FARMERS CAN PROTECT POLLINATORS



1. **Look at labels.** Follow crop protection product instructions, including using the recommended dose, preventing drift of sprays and dusts, not applying in windy conditions or when there is a danger of drift to non-target areas.
2. **Get real.** Only use genuine crop protection products. Counterfeit and illegal products have unknown impacts and could potentially harm wildlife.
3. **Spare the spray.** Apply crop protection products within an Integrated Pest Management program, only using them when necessary. For sprays, consider spot-spraying (just applying to infested areas).
4. **Bust dust.** Minimize distribution of dust from treated seed by carefully pouring it out of bags, using properly calibrated and maintained seeding machinery and recommended additives, avoiding seed spillage (cleaning it up otherwise) and disposing of seed bags and unused seed properly.
5. **Use a clean machine.** Utilize seed planting machinery that eliminates the production of dust and regularly clean seed equipment.
6. **Mind the time.** Avoid spraying when bees are foraging and plants are flowering.
7. **Protect liquid assets.** Avoid contamination from spray liquids by using drift-reduction application equipment that is properly maintained and calibrated, being cautious when mixing and loading, properly disposing of waste and used material, cleaning up any spills and carefully cleaning equipment.
8. **Empower with flowers.** Improve pollinator habitats by planting flower borders and maintaining hedgerows and unsprayed headlands.
9. **Communicate at the farm gate.** Farmers should inform local beekeepers when they are going to apply crop protection products so nearby hives can be moved or otherwise protected. Similarly, the crop protection industry can help farmers by promoting good application practices.
10. **“Bee” responsible.** Beekeepers also need to follow good management practices with good hygiene, disease control, proper feeding, access to water, genetic diversity and moving hives out of areas to be sprayed.



Farmers Increasing Pollinator Habitats Around the World

An industry-led program called [Operation Pollinator](#) is helping farmers in Europe, North America and Asia Pacific boost the number of pollinators on their farms by creating habitats tailored to native insects.

The initiative originated in the U.K. in 2001 where over 700 farmers were trained in habitat management and 1,200 hectares of special flowering plant seed mix attractive to pollinators were sown as field margins and on pockets of land where crops cannot easily be farmed. Today, Operation Pollinator works with more than 3,000 farmers across 16 European countries, North America and Asia Pacific.

Establishing these habitats helps significantly increase pollinating insect populations. Independent monitoring has shown bumblebee numbers [increase by up to 600 percent](#) on specific sites, butterfly numbers up 12-fold and other insects more than 10-fold within three years. The habitats can also improve crop yields due to better pollination, while creating habitats for small mammals and birds, simplifying field management and helping protect soil and water.

Initiated by the [crop protection industry](#), Operation Pollinator is supported by many partners, including universities, farmer groups, non-governmental organizations, beekeeper associations, government agencies and food producers.

Sharing the Story

European Farmer Training is 'TOPPS' Notch

In 2005, the European Crop Protection Association (ECPA) launched the first of several multi-stakeholder projects called TOPPS (Train the Operators to Prevent Pollution from Point Sources) with the goal of reducing "point and diffuse sources" of water pollution from crop protection products to protect Europe's surface water. Three projects ([TOPPS Life 2005-08](#), [TOPPS Extension 2009-11](#) and [TOPPS EOS 2009-11](#)) have been completed and another ([TOPPS Prowadis 2011-14](#)) is wrapping up this year. These projects are the first European Union-wide effort to develop and disseminate [best management practices](#) (BMPs) on how to avoid water pollution from crop protection products. Manfred Roettele, TOPPS project manager for ECPA, tells us more about these efforts.

Q What are "point and diffuse sources" and why are they being targeted?

Point source pollution refers to contaminants that enter water from single, identifiable sources, such as pipes or ditches. In agriculture, point



A farm worker wears proper protective clothing as he pours a crop protection product into a clean machine. Photo courtesy of the European Crop Protection Association.

Partnership Profile

Promoting Responsible Use of Crop Protection Products in Thailand



Who:

Thai Crop Protection Association, [Royal Project Foundation](#), [CropLife Asia](#) and [Thai Department of Agricultural Extension](#)

What:

Since 1991, the Thai Crop Protection Association (TCPA) has been educating farmers about the safe and responsible use of crop protection products in [north-ern Thailand](#) in cooperation with the Royal Project Foundation (RPF). In 2013, the Thai Department of Agricultural Extension (DoAE) – responsible for about 26,000 agricultural retail stores – TCPA and CropLife Asia formed a partnership on technical cooperation for the responsible use of crop protection products and proper disposal of empty containers. These efforts are supported by the RPF and DoAE. Each year, the TCPA allocates around \$18,000-\$20,000 USD for stewardship activities in collaboration with these partners.

Why:

As an agriculture-based economy and major food exporter, Thailand relies on crop protection products to grow crops such as rice, sugarcane, vegetables and cassava as well as to increase yields and improve quality. It is important that farmers use these products responsibly. Farmers are trained to read and follow product labels, use appropriate products, maintain the pre-harvest interval, wear proper protective clothing and carefully dispose of empty containers.

How:

The TCPA trains farmers on the responsible use of crop protection products through various media channels, including print, radio and television, as well as provides staff for government and non-governmental organization training programs. It also provides academic information, printed materials and experts to train farmers who plant vegetables, flowers and other crops for the RPF.

The RPF has 38 regional centers with storage capacity for empty crop protection product containers. It requires farmers to "triple rinse" these containers and puncture them before delivery to a regional center. The TCPA and DoAE provide resources for a triple rinse campaign to inform farmers how to properly rinse empty containers three times.

In 2012, the TCPA organized a capacity-building workshop for 100 extension officials and advisors of the RPF. The training covered updates on laws and regulations for crop protection registration, basic toxicology, responsible use of crop protection products, and proper rinsing and disposal of empty containers. TCPA experts have also taught the DoAE about other topics, such as how to manage crop protection products in retail shops.



Crop protection product is carefully applied to fruit trees in an enclosed sprayer to prevent spray drift. Photo courtesy of the European Crop Protection Association.

sources of crop protection products originate from activities on the farm, mainly during filling (spills), cleaning and maintaining sprayers (washing water). Point sources are the most significant source of surface water pollution; they account for 50 to 80 percent of it depending on local situations. The good news is point sources can be largely avoided by following best practices.

[Diffuse sources](#) (or non-point sources) are indirect causes of waterway pollution such as spray drift or field run-off and erosion due to excessive rain.

The crop protection industry is committed to training users of crop protection products on how to prevent both point and diffuse sources so they benefit from these products while protecting the environment. Implementing TOPPS BMPs helps reduce surface water contamination from these products. Improved sprayers and places to wash equipment also help minimize the risk of water pollution.

What are the objectives of TOPPS projects?

The main objective of these projects is to provide a toolbox of BMPs for water protection that can be easily used by the farmer to avoid point and diffuse source losses of crop protection products. Targeting both types of sources can significantly reduce water pollution.

How have the TOPPS projects evolved?

TOPPS started off as a pilot project that was co-funded by ECPA and the European Commission under its “Life” program and therefore called TOPPS Life. The objective was to develop BMPs to avoid water contamination resulting from point sources of crop protection products and disseminate them in 15 EU countries. TOPPS Extension spread the BMPs to an additional eight countries. TOPPS EOS (Environmentally Optimised Sprayer) raised awareness of the impact of improved

sprayer equipment technology to spray more effectively and reduce drift. Then TOPPS Prowadis focused on targeting diffuse sources of water pollution to offer a complete toolbox for water protection. The three latter TOPPS projects were primarily funded by EPCA with contributions from external partners (universities, national institutes and advisory services).

Can you describe each project in more detail?

TOPPS Life focused on developing and distributing BMPs to reduce point sources of crop protection products entering surface water. It included the development of printed materials, media tours and farmer training with demonstrations executed by local partners in 15 countries: Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Slovakia, Spain, Sweden and the U.K. TOPPS Extension expanded the programme to more EU countries, including Austria,



The ultimate objective of TOPPS projects is to help farmers get the most from crop protection products while protecting the environment and European waters.



A farm worker wearing protective clothing and rubber gloves washes crop protection product equipment. Photo courtesy of the European Crop Protection Association.

Bulgaria, Estonia, Greece, Latvia, Lithuania, Romania and Slovenia.

TOPPS EOS focused on sprayer technologies in order to reduce contamination risk and mistakes of operation. The project targeted crop protection product application experts from universities, extension offices, technical institutes, sprayer manufacturing companies and the crop protection industry. It was carried out in 10 countries: Belgium, Czech Republic, Denmark, France, Germany, Italy, Poland, Spain, Sweden and Switzerland.

TOPPS Prowadis developed BMPs for preventing water pollution from spray drift and run-off as well as tools to diagnose their risk according to certain weather and soil conditions. This project was executed in seven countries – Belgium, Denmark, France, Germany, Italy, Poland and Spain – which represent different facets of European agriculture.

Q What have been the results of these projects?

TOPPS BMPs for preventing point sources of water pollution from crop protection products are now established in 24 countries with pilot projects underway in Latvia and Lithuania. BMPs for preventing

diffuse sources have also been established in seven countries. By the end of 2014, it is estimated that nearly 9,000 farmers and their advisors in key European agricultural markets will have received training on TOPPS BMPs. Local partners include universities, agricultural centers, and public and private institutions.

Results are measured by increased awareness among farmers of how to protect water according to data from national or other monitoring programs. For example, some countries like Germany have already seen a reduction in these products in surface water. Farmer uptake of anti-drift technologies is also increasing along with smart sprayer designs to reduce risk of water pollution. Surveys with farmers to assess their perceptions of the problem and current practices have helped fine-tune training and demonstration programs.

Q Are future projects planned?

Yes, the plan is to continue raising awareness among farmers and other stakeholders about the water pollution problem and ways to address it. Water protection needs to be seen as cooperative process all along the application chain, including those responsible

for products, sprayers, infrastructure and water. ECPA now plans to launch its next phase of the TOPPS series called “TOPPS Water Protection” in 2015-17, which will extend work to date in an additional seven countries. The focus will be on distributing and helping farmers implement BMPs from theory to practical demonstrations. Stakeholders in other parts of the world, such as the U.S., Israel and Latin America, have also expressed interest in TOPPS BMPs.

The crop protection industry is committed to continuously promoting the responsible use of crop protection products as part of sustainable and productive agriculture. The ultimate objective of TOPPS projects is to help farmers get the most from these products while protecting the environment and European waters. 💧

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