



Health  
Canada

Santé  
Canada

*Your health and  
safety... our priority.*

*Votre santé et votre  
sécurité... notre priorité.*

# Pollinator Protection: Reducing Risk from Treated Seed

Updated April 8, 2013

Canada

## Table of Contents

Pollinator Protection: Reducing Risk From Treated Seed.....	1
Purpose.....	1
Background.....	1
Mitigation Strategy .....	2
Short Term Measures [For implementation in 2013] .....	2
Longer Term Measures .....	4
Appendix I    Best Management Practices .....	7
Pollinator Protection and Responsible Use of Treated Seed .....	7
Appendix II    Registered Products to which Label Amendments Apply .....	11
References.....	13

# Pollinator Protection: Reducing Risk from Treated Seed

## Purpose

The purpose of this document is to outline measures to reduce risk to pollinators from exposure to dust generated during planting of insecticide treated seed. While the focus of this document is on nitro-guanidine neonicotinoid treated corn seed, these measures may be extended to other types of treated seed or to other insecticides if a scientific evaluation shows that dust during planting poses a concern.

Registrants have been consulted on this document and have agreed to comply with these measures. Additional mitigation measures may be required if unacceptable risks are identified during the re-evaluation of the nitro-guanidine neonicotinoids (Re-evaluation Note, REV2012-02, *Re-evaluation of Neonicotinoid Insecticides*).

Risk Reduction Measures outlined in this document include:

- Short Term Measures
  - Best Management Practices for Planting Treated Seed
  - Treated Seed Dust Standard
  - Labelling of Treated Seed
- Longer Term Measures: Development of Technical Improvements and Stewardship
  - Seed Coating Quality
  - Seed Flow Lubricants
  - Planting Equipment
  - Treated Seed Bag Disposal

## Background

Between April and June 2012, PMRA received an unusually high number of incident reports of bee losses from across southern Ontario, involving 40 beekeepers and over 200 beeyards, as well as one report from Quebec involving eight beeyards. Timing and location of these incidents coincided with corn planting in major corn-producing regions of the provinces. Samples of affected bees were taken at many incident locations and analyzed for specific pesticide residues by the Pest Management Regulatory Agency (PMRA) Laboratory Services (Ontario) or Ministère de l'Agriculture, Pêcheries et Alimentation Québec (Quebec). Residues of nitro-guanidine neonicotinoid insecticides used to treat corn seed were detected in approximately 70% of the dead bee samples analysed. On a beeyard basis, these residues were detected in approximately 80% of the Ontario beeyards where dead bee samples were collected and analysed (57 out of 72 yards), and in all Quebec beeyards where dead bee samples were collected (1 yard).

The information evaluated to date suggests that insecticides used on treated corn seeds contributed to many of the 2012 spring bee losses. The route of exposure is believed to be through dust containing insecticide residues that was generated during the planting of treated corn seed. The full evaluation of these incidents is being finalized and will be released once it is complete.

As a result of the analysis to date, the PMRA is implementing the following mitigation measures to reduce exposure to dust generated during planting of nitro-guanidine neonicotinoid treated corn seed.

## **Mitigation Strategy**

This mitigation strategy is composed of short term measures to be implemented in 2013 and longer term measures, currently under research and development, which will be implemented as soon as possible.

### **Short Term Measures [For implementation in 2013]**

#### **Best Management Practices**

Best management practices for pollinator protection when planting treated seed are outlined in Appendix I. These were developed collaboratively with the pesticide industry (Crop Life Canada and individual registrants), international regulatory agencies, growers, beekeepers and equipment manufacturers. These best management practices may be refined over time through ongoing development. The best management practices are considered to be a toolbox of options to help reduce risk to pollinators, recognizing that not all practices may be possible under all circumstances.

The PMRA will implement a program in 2013 to communicate best management practices for pollinator protection to growers and beekeepers, including the best practices for planting treated seed as outlined in Appendix I.

The pesticide industry has also committed to actively promote these best management practices within the agricultural community and to play a leadership role in expanding communication channels among pesticide applicators, growers, and beekeepers. The purpose of enhanced communications is to raise awareness of all relevant parties in a given area of treated seed planting, so that timely and meaningful collaboration can occur.

Additionally, in 2013 the PMRA will assess how well the best management practices are working. This will include responding to any reported bee mortality incidents that are suspected to be related to planting of treated seed.

## Treated Seed Dust Standard

Seed treatment facilities should apply the best available techniques in order to ensure that the release of dust during planting is minimised. Treated seeds should adhere to a high technical standard of resistance to abrasion and low amounts of dust in the seed bags.

Registrants of nitro-guanidine neonicotinoids used to treat corn seed are to report annually to the PMRA on compliance with the following technical standard, which is consistent with European Standards:

- Treated corn seed must be in compliance with maximum permissible values for dust based on Heubach values: corn/maize <0.75 g dust/100,000 seeds (Heimbach, 2011; Forster, 2009; ESA, 2012; ESA, 2011).

Additionally, pesticide registrants have committed to further exploratory work to examine the amounts of active ingredient present in the dust, and will report findings to the PMRA.

## Labelling of Product and Treated Seed Tags

Labels for nitro-guanidine neonicotinoid pest control products used to treat seeds must specify that information be included on treated corn seed tags to alert growers and applicators to the potential hazard treated seed dust can pose to bees and to provide information regarding best management practices to be employed during the planting of treated seed. The pest control product labelling changes will be implemented in 2013 such that nitro-guanidine neonicotinoid treated corn seed entering the market place for the 2014 growing season is tagged/labelled with the appropriate statements.

## Labelling for Pest Control Products

Under “Environmental Hazards” include the following:

*[Name of active ingredient(s)] is toxic to bees. Dust generated during planting of treated seed may be harmful to bees and other pollinators. To help minimize the dust generated during planting, refer to the “Best Management Practices for Seed-Applied Insecticides” available at [www.croplife.ca](http://www.croplife.ca) (or 613-230-9881).*

*Any spilled or exposed seeds must be incorporated into the soil or otherwise cleaned-up from the soil surface*

Under “Use Restrictions” or the section on “Labelling Treated Seed” include the following:

*All treated [seed type] seed for sale or use in Canada must be labelled with the following information:*

*[Name of active ingredient(s)] is toxic to bees. Dust generated during planting of treated seed may be harmful to bees and other pollinators. To help minimize the dust generated during planting, refer to the “Best Management Practices for Seed-Applied Insecticides” available at [www.croplife.ca](http://www.croplife.ca) (or 613-230-9881).*

*Any spilled or exposed seeds must be incorporated into the soil or otherwise cleaned-up from the soil surface.*

Currently registered pest control products to which this label amendment applies are indicated in Appendix II. These measures may be extended to other products and/or seed types on a case-by-case basis where it is determined necessary based on a scientific evaluation.

## **Longer Term Measures**

### **Development of Technical Improvements and Stewardship**

The pesticide industry (Crop Life Canada and individual registrants as appropriate) will report regularly to the PMRA on development of technical improvements designed to further reduce the release of dust from treated seed. Areas requiring technical improvement and stewardship include seed coating quality, seed flow lubricants used during planting, planting equipment, and disposal of treated seed bags. It is recognized that development of technical improvements in some areas may be more readily accomplished than others, and that improvements may interact to further reduce exposure to dust.

#### **Seed coating quality:**

Pesticide registrants will report regularly to the PMRA on developments related to seed coating quality, such as improvements to seed coating formulations, polymers, etc., which will reduce abrasion of seed coating and generation of dust.

#### **Seed Flow Lubricants:**

Currently talc and graphite are used as seed flow lubricants during planting of treated seed. The use of talc may increase exposure to dust contaminated with pesticide from abraded seed coating. Pesticide registrants are currently developing alternative lubricants that may reduce exposure to dust, and will report progress regularly to the PMRA.

#### **Planting Equipment:**

The use of pneumatic seeders for planting corn may increase dust exposure to pollinators. Some planter models can have exhaust vents that are directed away from the ground and into the air and may operate with high air pressures, thus emitting more dust from the planter into the air.

Equipment manufacturers have committed to developing an International Standard (ISO/CD 17962) that will offer performance specifications for minimization of fugitive dust drift. The ISO standard would apply to new equipment and is anticipated to be ready for publication in 2015.

Until planting equipment designed to reduce drift of fan exhaust is available, operators may wish to consider installing deflector equipment, where appropriate, to reduce emission of dust into the air and off-field deposit of dust when planting corn seed treated with nitro-guanidine neonicotinoid insecticides wherever possible. Operators should consult with their planter dealer regarding availability of deflector equipment and potential changes in planter performance before any modifications are made.

**Treated Seed Bag Disposal:**

The pesticide industry is currently developing pilot programs for disposal of treated seed bags in keeping with its stewardship commitment. Treated seed bags may contain residual dust from the treated seed coating and should be disposed of properly to minimize exposure. The pesticide industry is requested to continue development of disposal programs for treated seed bags and report regularly to the PMRA.

**Regulatory Status:**

As the re-evaluation of the nitro-guanidine neonicotinoids proceeds, lack of progress in dust reduction may result in additional regulatory measures being taken.



# Appendix I Best Management Practices

## Pollinator Protection and Responsible Use of Treated Seed

Wild and managed pollinators are vital to agricultural production and the environment. Many farmers, including those who grow corn, use seed treated with insecticides to protect their crop from insect pests. Some insecticides, such as nitro-guanidine neonicotinoids, may be toxic to pollinators. Depending on handled number of factors, planting of treated seed can emit dust containing pesticide into the air, placing pollinators at potential risk if they are exposed to the dust.

The following best management practices (BMPs) are provided to reduce the risk to pollinators, particularly honey bees, from exposure to dust from treated seed.

These BMPs provide a toolbox of options to help reduce risks to pollinators, recognizing that not all practices may be possible under all circumstances.

### **Know where beehives are located**

Communication and cooperation among growers, seeders and beekeepers on the timing of seeding and the location of hives can help reduce the risk of bee incidents. Such communication can enable beekeepers to confirm that hives are located upwind of the planting field or in shelter belts, and have access to clean water sources. It can also permit beekeepers to temporarily protect or relocate hives where this is feasible.

### **Did you know?**

Honey bees can forage 5 km or more from the hive.

Honey bees forage actively during the daytime at temperatures above 13°C. Other pollinators, such as bumble bees may forage at temperatures below 13°C.

### **Weather conditions can influence pollinator exposure**

Pollinators can be exposed to treated seed dust when it is carried in the air or is deposited onto flowering crops, weeds, soil, or water sources. Since very dry and/or windy conditions may favour dust transport and exposure, it is important to monitor environmental conditions and avoid planting treated seed in such conditions.

Where possible:

- Avoid planting treated seed in windy and/or very dry conditions.
- Consider wind direction and avoid planting treated seed if bees are foraging downwind or nearby.
- Control flowering weeds in the field before planting so that foraging bees are not attracted to the planting site.

### **Avoid generating dust when handling treated seed**

Follow best practices when handling and loading treated seed:

- Check that treated seed and coating are of high quality: seeds should be clean and the coating should be well-adhered to the seeds.
- Handle bags with care during transport, loading and unloading in order to reduce abrasion, dust generation and spillage.
- Do not load or clean planting equipment near bee colonies, flowering crops or weeds, or hedges.
- Pour seeds carefully into the planter in such a way as to avoid the transfer of dust from the seed bag.
- Do not shake any loose material or dust from the seed bag into the planting equipment.

### **Maintain planting equipment**

It is important to use planting equipment that minimizes spillage and dust emission from the planter, and to follow planting equipment manufacturer directions.

- Follow the directions provided from planting equipment manufacturers and keep up-to-date on new use practices.
- Clean and maintain planting equipment regularly.
- Consider using deflector equipment, where appropriate, to reduce emission of dust into the air and off-field deposit of dust.
- Seed flow lubricants may affect the generation of dust during planting; carefully follow use directions.

### **Ensure proper clean-up and disposal**

Take care when cleaning up after planting seed and follow provincial/municipal disposal requirements:

- Spilled or exposed seeds and dust must be incorporated into the soil or cleaned-up from the soil surface.
- Keep treated seed and dust away from surface water.
- Properly dispose of any dust or treated seed remaining in planting equipment (for example, empty into a container and vacuum any dust remaining in the hopper).
- Do not leave empty bags or left-over treated seed in fields or the environment.
- Participate in collection programs for seed bags where available.

### **Exercise pollinator-friendly practices throughout the growing season**

Bees collect pollen, nectar and water from different sources that could become contaminated with pesticide residue. For example, bees collect pollen and nectar from flowering crops and weeds, as well as water from puddles and moist soil in or beside fields.

- Avoid contamination of plants, soil and water sources that may be used by bees.
- Bees should always be provided with a source of clean drinking water.
- Provide pollinator-friendly habitat (for example, alfalfa, clover, wildflowers) away from active fields.

### **Report suspected pollinator pesticide poisonings**

For poisonings related to treated seed in 2013, contact the appropriate federal or provincial authority:

British Columbia:	604-556-3129
Alberta:	780-495-5042
Saskatchewan:	306-953-2304
Manitoba:	204- 945-4825
Ontario:	519-826-2895
Quebec:	1-866-381-1717
Nova Scotia:	902-679-8998
Prince Edward Island:	902-314-0816
New Brunswick:	506-453-2108
Newfoundland:	709-637-2079

You can also contact Health Canada's Pest Management Regulatory Agency at 1-800-267-6315

**Don't forget to wear personal protective equipment when handling treated seed**

Wear appropriate personal protective equipment (PPE) and avoid exposure to dust.

- Wear PPE for handling treated seed as specified on the seed tag and the product label. PPE may include long pants, a long-sleeved shirt, coveralls, shoes and socks, chemical resistant gloves or a respirator.
- Avoid exposure to dust when handling treated seed when opening and emptying treated seed packaging, loading and planting, and during clean-up and disposal activities.

**Related Information**

For information on best practices that reduce the potential of adverse effects to pollinators during pesticide spray applications, consult the fact sheet "*Pollinator Protection and Responsible Pesticide Spraying*".



## Appendix II Registered Products to which Label Amendments Apply

**Table 1 Registered Products to which Label Amendments Apply**

Registration Number	Active Ingredient	Registrant Name	Product Name
27453	Clothianidin	Bayer CropScience Inc.	Poncho 600 FS Seed Treatment Insecticide
28975	Clothianidin	Valent Canada, Inc.	Nipsit Inside 600 Insecticide
27045	Thiamethoxam	Syngenta Canada Inc.	Cruiser 5FS Seed Treatment
27986	Thiamethoxam	Syngenta Canada Inc.	Cruiser 350FS Seed Treatment
26124	Imidacloprid	Bayer CropScience Inc.	Gaucho 480 FL Insecticide
27170	Imidacloprid	Bayer CropScience Inc	Gaucho 600 FL Insecticide
30505	Imidacloprid	Makhteshim Agan of North America Inc.	Sombbrero 600 FS



## References

ESA (European Seed Association). 2011. Physical Method – Assessment of Free Floating Dust and Abrasion Particles of Treated Seeds as a Parameter of the Quality of Treated Seeds. Heubach Test, Version 1.0. ESA STAT Dust Working Group. March 23, 2011 (available at: [http://www.euroseeds.org/ESA\\_11.0387.pdf](http://www.euroseeds.org/ESA_11.0387.pdf)).

ESA. 2012. Industry Dust Reference Values. May 4, 2012 (available at: <http://www.euroseeds.org/publications/codes/esta-european-seed-treatment-assurance/esa-dust-reference-values>).

Heimbach, U. 2008. Heubach Method to Determine the Particulate Matter of Maize Seeds Treated with Insecticides. JKI-Institute for Plant Protection in Field Crops and Grassland, Brunswick, Germany, December 2008.(available at: <http://www.jki.bund.de/heubachen.html> ).

Forster, R. 2009. Bee poisoning caused by insecticidal seed treatment of maize in Germany in 2008. Julius- Kühn –Archiv 423, p 126 – 131.  
<http://pub.jki.bund.de/index.php/JKA/article/download/143/128>

Forster, R. 2012. Risk mitigation measures for seed treatments using neonicotinoids. In Hazards of pesticides to bees, 11th International Symposium (ICPBR), Netherlands 2011, (Omen, P.A.; Thompson, H. eds.) Julius-Kühn-Archiv, 437, 63-68, 2012. (available at: <http://pub.jki.bund.de/index.php/JKA/article/view/1939/2315>).

Forster, R., Giffard, H., Heimbach, U., Laporte, J.-M., Lückmann, J., Nikolakis, A., Pistorius, J., Vergnet, C. 2012. ICPBR-Working Group Risks posed by dusts: overview of the area and recommendations. In Hazards of pesticides to bees, 11th International Symposium (ICPBR), Netherlands 2011, (Omen, P.A.; Thompson, H. eds.) Julius-Kühn-Archiv, 437, 191 - 198, 2012. (available at: <http://pub.jki.bund.de/index.php/JKA/article/view/1981/2357>).

Commission Directive 2010/21/EU. 12 March 2010. Amending Annex I to Council Directive 91/414/EEC as regards the specific provisions relating to clothianidin, thiamethoxam, fipronil and imidacloprid. (available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:065:0027:0030:EN:PDF>).