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Proposed Registration Decision

PRD2017-18

# Thiamethoxam

*(publié aussi en français)*

**19 December 2017**

This document is published by the Health Canada Pest Management Regulatory Agency. For further information, please contact:

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Canada 

ISSN: 1925-0878 (print)  
1925-0886 (online)

Catalogue number: H113-9/2017-18E (print version)  
H113-9/2017-18E-PDF (PDF version)

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# Overview

## Background

Thiamethoxam Technical (Reg. No. 26665) is fully registered in Canada for use in gel bait insecticides for ant control. Other uses of Thiamethoxam Technical, and its associated end-use products (see list in Table 1), are conditionally registered in Canada for use as seed treatments, foliar and soil applications. Additional information to assess the potential risk to pollinators for these uses was required under section 12 of the *Pest Control Products Act* as a condition of registration. The required additional information for these end-use products has been received and reviewed under applications to fulfill the conditions of registration.

A re-evaluation of thiamethoxam was announced in 2012 (Re-evaluation Note REV2012-02, *Re-evaluation of Neonicotinoid Insecticides*). This re-evaluation was initiated to assess the potential risk to pollinators in light of international updates to the pollinator risk assessment framework, including information requirements. Data received from the registrants, including those that were required to fulfill the conditions of registration under section 12, as well as data obtained from published literature, were considered in the re-evaluation assessment.

Health Canada has completed an assessment of pollinator risk for thiamethoxam. A Proposed Re-evaluation Decision has been published in PRVD2017-24, *Thiamethoxam and Its Associated End-use Products: Pollinator Re-Evaluation*. This document summarizes the science evaluation with regards to the potential risks posed by thiamethoxam to pollinators in Canada, as well as proposes strategies to reduce the risks to these pollinators.

This Proposed Registration Decision document is consistent with the pollinator re-evaluation outcome. The final re-evaluation outcome will be reflected in the final registration decision for the thiamethoxam technical active ingredient, and the end-use products listed in Table 1.

**Table 1**      **Conditionally registered end-use products containing thiamethoxam included in this consultation.**

Product Name	Registration Number
Cruiser Maxx Vibrance Cereals Seed Treatment	30436
Helix Liquid Seed Treatment	26637
Helix XTRA Seed Treatment	26638
Cruiser 5FS Seed Treatment	27045
Cruiser 350FS Seed Treatment Insecticide	27986
Cruiser Maxx Beans Seed Treatment	28821
Cruiser Maxx Cereals Commercial Seed Treatment	29127
Cruiser Maxx Cereals Seed Treatment	29192
A18046A Seed Treatment	30388
Cruiser Maxx Potato Extreme	31024
Cruiser Vibrance Quattro	31453
Helix Vibrance	31454

Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Pest Control Products Regulations, has extended the validity period of the registrations of the products set out in Table 1 until 31 December 2019. This extension is also applicable to the Use-Site Category<sup>1</sup> 10 for Thiamethoxam Technical (Reg. No. 26665). This extension was granted under 14(7) of the former Pest Control Products Regulations, to carry out the consultation under 28(1)(c)<sup>2</sup> of the *Pest Control Products Act*, on the proposed registration decisions in respect of these products. The PMRA considers it in the public interest to consult on the proposed registration decisions in light of, and in response to the growing public interest in the registration status of the neonicotinoid insecticides.

## List of Data Previously Required as a Condition of Registration under Section 12

Below is listed the additional information to assess the potential risk to pollinators which was previously required under section 12 of the *Pest Control Products Act* as a condition of registration.

<b>DACO:</b>	8.5
<b>Title:</b>	Fate of thiamethoxam and the transformation product clothianidin in plants, including concentrations in nectar and pollen.
<b>Details:</b>	A study conducted at the highest registered rate, which determines the concentration of thiamethoxam and clothianidin in nectar and pollen of plants (plant fate study).

## Proposed Registration Decision for Thiamethoxam

Health Canada's PMRA, under the authority of section 8 of the *Pest Control Products Act*, is proposing a three-year registration for the sale and use of the end-use products listed in Table 1. This three-year registration proposal is also applicable to Use-Site Category 10 of Thiamethoxam Technical (Reg. No. 26665). This consultation is carried out under 28(1)(c) of the *Pest Control Products Act*, and as such is not subject to section 35(1) of the *Pest Control Products Act*.

An evaluation of available scientific information as set out in PRVD2017-24, *Thiamethoxam and Its Associated End-use Products: Pollinator Re-Evaluation* and in this document found that, under the approved conditions of use, the products have value and do not present an unacceptable risk to human health or the environment, provided that labels of registered products are amended as recommended.

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<sup>1</sup> USC 10 (Seed and Plant Propagation Materials Food and Feed) details at: <https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/registrants-applicants/product-application/use-site-category-daco-tables/definitions-conventional-chemical-pesticides.html>

<sup>2</sup> 28 (1) The Minister shall consult the public and federal and provincial government departments and agencies whose interests and concerns are affected by the federal regulatory system before making a decision, (c) about any other matter if the Minister considers it in the public interest to do so.

## What Does Health Canada Consider When Making a Registration Decision?

The key objective of the *Pest Control Products Act* is to prevent unacceptable risks to individuals and the environment from the use of pest control products. Health and environmental risk are considered acceptable<sup>3</sup> if there is reasonable certainty that no harm to human health, future generations or the environment will result from use or exposure to the product under its proposed conditions of registration. The Act also requires that products have value<sup>4</sup> when used according to the label directions. Conditions of registration may include special precautionary measures on the product label to further reduce risk.

To reach its decisions, the PMRA applies modern, rigorous risk-assessment methods and policies. These methods consider the unique characteristics of sensitive subpopulations in humans (for example, children) as well as organisms in the environment. These methods and policies also consider the nature of the effects observed and the uncertainties when predicting the impact of pesticides. For more information on how the PMRA regulates pesticides, the assessment process and risk-reduction programs, please visit the Pesticide and Pest Management portion of Canada.ca website at <https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management.html>.

Before making a final registration decision on thiamethoxam, the PMRA will consider any comments received from the public in response to this consultation document.<sup>5</sup> The PMRA will then publish a Registration Decision<sup>6</sup> on thiamethoxam, which will include the decision, the reasons for it, a summary of comments received on the proposed final registration decision and the PMRA's response to these comments.

### Summary of Risk Mitigation Measures

Labels of registered pesticide products include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law. As a result of the pollinator re-evaluation of thiamethoxam, further risk mitigation measures for product labels are being proposed (see below).

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<sup>3</sup> "Acceptable risks" as defined by subsection 2(2) of the *Pest Control Products Act*."

<sup>4</sup> "Value" as defined by subsection 2(1) of the *Pest Control Products Act*: "... the product's actual or potential contribution to pest management, taking into account its conditions or proposed conditions of registration, and includes the product's (a) efficacy; (b) effect on host organisms in connection with which it is intended to be used; and (c) health, safety and environmental benefits and social and economic impact."

<sup>5</sup> "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

<sup>6</sup> "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

## **Measures to Protect Pollinators for seed treatment products, as found in PRVD2017-24, *Thiamethoxam and Its Associated End-use Products: Pollinator Re-Evaluation***

To minimize bee exposure to dust during planting of treated seed, **additional label statements are proposed for the following use:**

- Seed treatment of cereal and legume crops.

The risk-reduction measures and other conditions of registration being proposed as a result of the re-evaluation review of the risk to pollinators will apply to the end-use products listed in Table 1. Refer to PRVD201724, *Thiamethoxam and Its Associated End-use Products: Pollinator Re-Evaluation* (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/public/consultations.html>).

## **Conclusion**

The conditions of registration relating to the submission of additional information required under section 12 of the *Pest Control Products Act* for Use-Site Category 10 of Thiamethoxam Technical, and its associated end-use products listed in Table 1, have been met. To address potential risks to pollinators, amendments to the registrations of thiamethoxam products have been proposed.

Health Canada's PMRA, under the authority of section 8 of the *Pest Control Products Act*, is proposing a three-year registration for the Use-Site Category 10 of Thiamethoxam Technical (Reg. No. 26665), and for the sale and use of the end-use products listed in Table 1. An evaluation of available scientific information as set out in PRVD201724, *Thiamethoxam and Its Associated End-use Products: Pollinator Re-Evaluation* and in this Proposed Registration Decision document found that, under the approved conditions of use, the products have value and do not present an unacceptable risk to human health or the environment.

## **Next Steps**

Before making a final registration decision on thiamethoxam, the PMRA will consider any comments received from the public in response to this consultation document. The PMRA will accept written comments up to 90 days from the date of publication. The PMRA will then publish a Registration Decision on thiamethoxam, which will include the decision, the reasons for it, a summary of comments received on the proposed final registration decision and the PMRA's response to these comments.

## Science Evaluation

The detailed review previously conducted for thiamethoxam based products can be found in the published document Regulatory Note REG2001-03, *Thiamethoxam, Helix, Helix XTra*.

### 1.0 The Active Ingredient, Its Properties and Uses

No new additional information was required under section 12 to assess the active ingredient, its properties and uses.

### 2.0 Impact on Human and Animal Health

Previous human and animal health assessments determined that the under the conditions of use, no risks of concern were identified. As there were no additional information required pertaining to human health issued under section 12, no further assessment was conducted.

### 3.0 Impact on the Environment

Refer to PRVD2017-24, *Thiamethoxam and Its Associated End-use Products: Pollinator Re-Evaluation* for the science review of the data listed in the section “List of data previously required as a condition of registration under section 12” and for the review of public literature relevant to the assessment.

### 4.0 Value

No updates to previously conducted value assessments were required as there were no additional information required pertaining to value issued under section 12.





## References

### A. Registrant Submitted Studies/Information

#### A.1 Environmental Assessment

##### A.1.1 Environmental Fate and Effects Assessment

PMRA Document Number	Reference
2373072	2012, The role of pesticides on honey bee health and hive maintenance with an emphasis on the neonicotinoid, imidacloprid, DACO: 8.6,9.9
2446870	2006, Monitoring pesticide residues in Lake Naivasha, Kenya, DACO: 8.3.4
2461577	2014, Thiamethoxam/Difenoconazole/Metalaxyl-M/Fludioxonil FS (A11642A) - Residue Levels in or on Canola (Flowers, Pollen and Nectar) from Trials Conducted in Canada During 2012 and 2013, DACO: 8.5
2529336	Thiamethoxam 40 WG (A11963C) - Magnitude of Residues in Flowers, Leaves, Pollen, and Nectar of Cotton Plants After Foliar Application with Centric(R) 40WG in California or After Application as a Seed Treatment with Cruiser(R) 5FS (Interim Report), DACO: 8.5
2580511	2015, Thiamethoxam SC (A9795B) and Thiamethoxam/Difenoconazole/Metalaxyl-M/Fludioxonil SU (A11642D) - Residue Levels in or on Canola (Pollen and Nectar) from Trials Conducted in Canada During 2013 and 2014, DACO: 8.5,9.9
2600069	2015, Thiamethoxam 25WG (A9584C)- Magnitude of residues in or on pollen, nectar, flowers, and leaves of cranberry after foliar application- Final Report, DACO: 8.5
2600070	2015, Thiamethoxam 25WG (A9584C)- Magnitude of residues in pollen, flowers, and leaves of tomato after foliar application- Final Report, DACO: 8.5
2600071	2015, Thiamethoxam 75SG (A9549C)- Magnitude of residues in pollen, flowers, and leaves of pepper after soil application- Final Report, DACO: 8.5
2600072	2015, Thiamethoxam 25WG (A9584C)- Magnitude of residues in or on leaves, flowers, pollen and nectar of cucumber after foliar application- Final Report, DACO: 8.5
2600073	2015, Thiamethoxam 5FS (A95765N)- Magnitude of residues in leaves, flowers, anthers, pollen and nectar of soybean plants grown from treated seed- Final Report, DACO: 8.5
2610249	2015, Thiamethoxam 25WG (A9584C)- Magnitude of residues in pollen, nectar, flowers, and leaves of stone fruit after foliar application with Actara 25WG in California- Final Report, DACO: 8.5
2625070	2016, Thiamethoxam 75SG (A9549C)- Magnitude of the Residues in Leaves, Flowers, Anthers, Pollen, and Nectar of Orange, EPA Crop Group 10, in Florida, DACO: 8.5
2769750	2017, Thiamethoxam 25WG (A9584C) - Magnitude of residues in pollen, nectar, flowers and leaves of strawberry after foliar application with Actara 25WG in California Final report, DACO: 8.5

PMRA Document Number	Reference
2769751	2017, Thiamethoxam 75SG (A9549C) - Determination of residues in pollen, flowers and leaves of tomato after soil application with Platinum 75SG Final report, DACO: 8.5
2769753	2017, Thiamethoxam (A18481A) - Determination of residues in leaves, flowers, anthers, pollen and nectar of soybean plants after foliar application Final report, DACO: 8.5
2769754	2017, Thiamethoxam 25WG (A99584C) - Magnitude of residues in leaves, flowers, pollen, and nectar of apple foliar application Final report, DACO: 8.5
2770410	2017, Thiamethoxam 75SG (A9549C) - Determination of residues in leaves, flowers, pollen and nectar of pumpkin, summer squash and muskmelons after soil application Final report, DACO: 8.5
2775766	2017, Thiamethoxam 75SG (A9549C) - Determination of Residues in Leaves, Flowers, Pollen, and Nectar of Strawberry After Soil Application Final Report, DACO: 8.5
1761405	2003, Field Test: Side Effects of Sunflower Grown from Seeds Dressed with A-9700 B on the Honey Bee ( <i>Apis mellifera</i> L.) in Argentina, DACO: 9.2.4
1761417	2001, Field Test: Side Effects of Sunflowers Grown from Seeds Dressed with CGA 293343 350 FS (A-9700 B) on the Honey Bee ( <i>Apis mellifera carnica</i> ), DACO: 9.2.4
1761443	2003, Evaluation of the Use of CRUISER (Thiamethoxam CGA 293343) Seed Treatment Use on Sunflower to Honey Bees, DACO: 9.2.4
1983052	2009, Thiamethoxam (CGA293343): A field study with A9807C treated winter oilseed rape seed, investigating effects on honeybees ( <i>Apis mellifera</i> L.) over four years in Alsace (France) - Final Report, DACO: 9.2.4.3
1983053	2009, Thiamethoxam (CGA293343): A field study with A9807C treated winter oilseed rape seed, investigating effects on honeybees ( <i>Apis mellifera</i> L.) over four years in Northern France - Final Report, DACO: 9.2.4.3
2197610	2010, Thiamethoxam FS (A9700B) - Determination of Residues of Thiamethoxam and CGA322704 in the Honeybee <i>Apis mellifera</i> L. in the Laboratory, DACO: 9.2.4,9.2.4.1,9.2.4.2
2197611	2010, Thiamethoxam (A9700B) - Exposure to Dust from A9700B Treated Maize Seeds and the Determination of Residues of Thiamethoxam and CGA322704 in the Honeybee <i>Apis mellifera</i> L. in the Laboratory, DACO: 9.2.4,9.2.4.1,9.2.4.2
2286963	2009, Determination of AE 0364971 Residues in Honey Bees ( <i>Apis mellifera</i> ) after Contact and Oral Application in the Laboratory, DACO: 9.2.4
2296375	2000, Acute Toxicity Test of CGA 293343 Tech. to the Ephemeroptera <i>Cloeon</i> sp. Under Static Conditions, DACO: 9.3.4
2297707	2012, Investigation of a May 1, 2012 Bee Kill Incident Hypothesized to be Associated with Planting of Insecticide-treated Maize Seed near Elbow Lake, Minnesota, DACO: 9.9
2364804	2011, Thiamethoxam FS 350 (A9700B) - Acute Oral and Contact Toxicity to the Honeybee <i>Apis mellifera</i> L. in the Laboratory, DACO: 9.2.4.1,9.2.4.2

PMRA Document Number	Reference
2364808	2011, Thiamethoxam WG (A9584C) - Honeybees ( <i>Apis mellifera</i> ), acute contact toxicity test, DACO: 9.2.4.1
2364810	1997, Assessment of side effects of CGA 322704 to the honey bee, <i>Apis mellifera</i> L. in the laboratory following the EPPO Guideline No. 170, DACO: 9.2.4.1,9.2.4.2,9.2.4.3
2364812	2007, Actara 75WG (A9549C) - Acute Contact Toxicity Test with the Honey Bee ( <i>Apis mellifera</i> ), Following EPPO Guideline 170 (2000) and OECD Guideline 214, DACO: 9.2.4.1
2364814	2012, Thiamethoxam - Acute Toxicity to Larval Honey Bees ( <i>Apis mellifera</i> ), DACO: 9.2.4.1,9.2.4.2
2364816	1998, Acute contact LD50 of CGA 293343 WG 25 (A-9584 C) to the bumble bee <i>Bombus terrestris</i> L., DACO: 9.2.4.1
2364822	2009, CRUISER 600 FS - Honeybees ( <i>Apis mellifera</i> ), Acute Contact Toxicity Test, DACO: 9.2.4.1
2364824	1999, Acute Oral and Contact Toxicity of CGA-293343 (a12005b) to the Honeybee, <i>Apis Mellifera</i> , DACO: 9.2.4.1,9.2.4.2
2364826	2007, Thiamethoxam SC (A9795B) - Rate-response laboratory bioassays to determine acute contact and oral toxicity on the honeybee, <i>Apis mellifera</i> , DACO: 9.2.4.1
2364828	2008, Thiamethoxam WS (A9567B) - Acute Contact Toxicity Test in Bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.1
2364835	1999, Toxicity of Actara (Thiametoxam) 25% WG to adults of honey bee ( <i>Apis mellifera</i> ) by spray method, DACO: 9.2.4.1,9.2.4.2
2364839	2009, Thiamethoxam (A9700B, A9584C) ? Oral and Contact Toxicity of Maize Dust containing A9700B and Actara (A9594C) to the Honey Bee <i>Apis mellifera</i> L., DACO: 9.2.4.1,9.2.4.2
2364843	2008, Thiamethoxam WS (A9567B) - Acute Oral Toxicity Test in Bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.2
2364846	2011, Thiamethoxam SG (A9549C) ? Acute oral toxicity to the honeybee <i>Apis mellifera</i> L. in the laboratory, DACO: 9.2.4.2
2364856	1998, Acute oral LD50 of CGA 293343 WG 25 (A-9584 C) to the bumble bee <i>Bombus terrestris</i> L., DACO: 9.2.4.2
2364861	2011, Thiamethoxam FS (A9700B) - Acute oral toxicity test in bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.2
2364868	2005, CGA-293343 - Honey Bee Field Investigation of Actara Pre-Bloom Use in Bartlett Pears, DACO: 9.2.4.3
2364874	1996, Testing toxicity to Honeybee - <i>Apis mellifera</i> L. (semifield) CGA 293343 WG 25, DACO: 9.2.4.3
2364876	2013, Thiamethoxam - Assesment of Subchronic Effects to the Honey Bee, <i>Apis mellifera</i> L., in a 10-Day Laboratory Feeding Test, DACO: 9.2.4.3

PMRA Document Number	Reference
2364881	1998, Semi-field test: effects of CGA 293343 WG 25 (A-9584 C) on the Honey bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.3
2364885	1997, Assessment of side effects of CGA 293343 WG 25 on the Honey bee ( <i>Apis mellifera</i> L.) by application in an apple orchard after flowering, DACO: 9.2.4.3
2364887	1998, Semi-field test: effects of oil-seed rape grown from seeds dressed with A 9700 B on the honey bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.3
2364896	2001, Field test: side effects of sunflower grown from seeds dressed with CGA 293343 WS 70 (A-9567 B) on the honey bee ( <i>Apis mellifera</i> L.) in Spain, DACO: 9.2.4.3
2364898	1999, Impact of CGA 293343 WG 25 (A-9584 C) after one drip irrigation on the bumble bee <i>Bombus terrestris</i> L. under semi-field conditions on tomatoes, DACO: 9.2.4.3
2364900	1999, Impact of CGA 293343 WG 25 (A-9584 C) after one spray application on the bumble bee <i>Bombus terrestris</i> L. under semi-field conditions on tomatoes, DACO: 9.2.4.3
2364905	2001, Field test: effects of oil-seed spring-rape grown from seeds dressed with CGA 293343 WS 70 (A-9567 B) on the honey bee ( <i>Apis mellifera</i> L.) (conducted in Northern Germany near Celle), DACO: 9.2.4.3
2364909	2001, Field Test: Effects of Oil-Seed Spring-Rape Grown from Seeds Dressed with CGA 293343 WS 70 (A 9567 B) on the Honey bee ( <i>Apis melifera</i> L.) (conducted in southern Germany near Pforzheim), DACO: 9.2.4.3
2364910	2002, Assessment of side effects of CGA293343 WG25 (A9584C) on the Honey Bee ( <i>Apis mellifera</i> L.) in Apple Orchard following application before flowering (mouse-ear stage) of the crop. Non GLP test in Spain, DACO: 9.2.4.3
2364914	2001, Semi-field test: side effects of oil-seed spring -rape ( <i>Brassica napus</i> ) dressed with different rates of CGA 293343 on the honey bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.3
2364916	2003, Assessment of Side Effects of CGA 293343 WG 25 (A 9584 C) on the Honey Bee ( <i>Apis mellifera</i> L.) in the Field following Application via Drip Irrigation to Honeydew Melon Plants, DACO: 9.2.4.3
2364919	2001, Semi-Field Test (Tunnel): Side Effects of Sunflower Grown from Seeds Dressed with A-9567 B on the Honey Bee ( <i>Apis mellifera</i> L.) in Spain, DACO: 9.2.4.3
2364922	2001, Field test: side effects of sunflower grown from seeds dressed with A-9567 B on the honey bee ( <i>Apis mellifera</i> L.) in Italy, DACO: 9.2.4.3
2364923	1998, Tunnel test: Effects of sunflowers grown from seeds dressed with A-9567 B on honey bees ( <i>Apis mellifera</i> L.), DACO: 9.2.4.3
2364928	2001, Side effects of Sunflowers grown from seeds dressed with CGA 293343 350 FS (A 9700 B) on the honeybee ( <i>Apis mellifera carnica</i> ), DACO: 9.2.4.3
2364931	2001, Field Test (Non-GLP): Side Effects of Oil-Seed Winter Rape Grown from Seeds Dressed with A9807 C on the Honey Bee ( <i>Apis mellifera</i> L.), DACO: 9.2.4.3

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2364936	2013, Two Field Trials to Determine the Effects of HELIX Seed Treatment on Honeybees Foraging on Canola Flowers - Amendment 2, DACO: 9.2.4.3
2364945	2010, Thiamethoxam (CGA293343) - A Field Study with A9700B + A9638A Treated Maize Seed, Investigating Effects on Honeybees ( <i>Apis mellifera</i> L.) over Four Years in Alsace (France), DACO: 9.2.4.3
2364948	2011, Thiamethoxam WG (A9584C) - A Field Study to Evaluate Effects on the Honeybee ( <i>Apis mellifera</i> ; Hymenoptera, Apidae) in Peach in Italy 2010, DACO: 9.2.4.3
2364950	2011, Thiamethoxam WG (9584C) - A Semi-Field Study to Evaluate Effects on the Honeybee ( <i>Apis mellifera</i> ; Hymenoptera, Apidae) in Melon in Italy 2010, DACO: 9.2.4.3
2364952	2009, Thiamethoxam (CGA293343) - A Field Study with A9700B + A9638A Treated Maize Seed, Investigating Effects on Honeybees ( <i>Apis mellifera</i> L.) over Four Years in Lorraine (France), DACO: 9.2.4.3
2364957	2010, Thiamethoxam (CGA293343) - A Field Study with A9700B + A9638A Treated Maize Seed, Investigating Effects on Honeybees ( <i>Apis mellifera</i> L.) over Four Years in Southern France, DACO: 9.2.4.3
2364966	2000, Assessment of side-effects of CGA 293343 WG 25 (A-9584 C) on the honeybee ( <i>Apis mellifera</i> L.) in pome fruit orchards after application during bee-flight, DACO: 9.2.4.3
2364970	2002, Subchronic toxicity of CGA 293343 and CGA 322704 to Honeybees, DACO: 9.2.4.3
2364974	2010, Thiamethoxam (A9700B, A9584C) ? A Semi-field Study with Dust from A9700B treated Maize Seeds and A9584C to Evaluate Effects on the Honeybee <i>Apis mellifera</i> L, DACO: 9.2.4.3
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2364985	2003, Determination of Analytes Thiamethoxam (CGA 293343) and its Metabolite CGA 322704 in or on Pollen, Nectar and Honey from Sunflower Collected in Study 991567, DACO: 9.9
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2365047	2007, Thiamethoxam (CGA293343) and its Metabolite (CGA322704) - A residue study with A9807C treated winter oil-seed rape seed, investigating residues in crop and honeybee products in Alsace (France), DACO: 9.9
2365051	2007, Thiamethoxam (CGA293343) and its Metabolite (CGA322704) - A residue study with A9807C treated winter oil-seed rape seed, investigating residues in crop and honeybee products in Northern France, DACO: 9.9
2365055	2007, Thiamethoxam (CGA293343) and its Metabolite (CGA322704) - A residue study with A9807C treated winter oil-seed rape seed, investigating residues in crop and honeybee products in Southern France, DACO: 9.9
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2365090	2002, Residue Study with Thiamethoxam (CGA 293343) in or on Spring Barley and Sunflower in North of France, DACO: 9.9
2365092	2002, Residue Study with Thiamethoxam (CGA 293343) in or on Spring Barley and Sunflower in South of France, DACO: 9.9
2365094	2002, Residue Study with Thiamethoxam (CGA 293343) in or on Spring Barley and Maize in North of France, DACO: 9.9
2365095	2002, Residue Study with Thiamethoxam (CGA 293343) in or on Spring Barley and Maize in South of France, DACO: 9.9
2365321	2010, Thiamethoxam (CGA293343) - A Semi-Field Study with A9700B + A9638A Treated Maize Seed, Followed By Untreated Flowering Crop(s), Investigating Residues in Crop(s), Soil and Honeybee Products in Alsace (France), in 2009, DACO: 9.9
2365330	2010, Thiamethoxam (CGA293343) - A semi-field study with A9700B + A9638A treated maize seed, followed by untreated flowering crop(s), investigating residues in crop(s), soil and honeybee products in Picardie (France), in 2009, DACO: 9.9
2365332	2010, Thiamethoxam (CGA293343) - A semi-field study with A9700B + A9638A treated maize seed, followed by untreated flowering crop(s), investigating residues in crop(s), soil and honeybee products in Burgundy (France), in 2009, DACO: 9.9
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PMRA Document Number	Reference
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2365373	2012, Thiamethoxam FS (A9700B) - A Field Study with treated Maize Seeds, Investigating the Effects of Residues from Dust during Drilling, Residues in Guttation Liquid and Flowering Maize, on the Honeybee ( <i>Apis mellifera</i> L. ) in Stade, Germany in 2010, DACO: 9.9
2365392	2000, Honey bee field investigation of mitigation methods for CGA293343 (A-9795 B) use in cucumbers, DACO: 9.9
2365400	2013, Feeding of honey bees ( <i>Apis mellifera</i> L.) with thiamethoxam (CGA 293343) 1. Testing of return flight ability 2. Feed consumption and exchange (trophallaxis), DACO: 9.9
2365412	2006, Residue Study with Thiamethoxam (CGA 293343) in or on Maize and Sunflower in South of France, DACO: 9.9
2365414	2006, Residue Study with Thiamethoxam (CGA293343) in or on Sunflower in North of France, DACO: 9.9
2365420	2000, Effect of 1 administration of CGA 293343 (A 9795 B) to tomato on the bumblebee <i>Bombus terrestris</i> determined under greenhouse conditions, DACO: 9.9
2365435	2012, Magnitude of the Residues in Leaves and Flowers from Tomato in California, DACO: 9.9
2385909	2011, Thiamethoxam WG (A9584C) - Honeybees ( <i>Apis mellifera</i> ), acute oral toxicity test, DACO: 9.2.4.2
2404303	2013, Thiamethoxam (A9765N) - Magnitude of the Residues in Whole Flowers, Leaves, and Reproductive Organ Tissues (Structures) of Soybean from Plants Grown from Cruiser(R) 5FS-Treated Seed, DACO: 9.9
2459449	2013, Thiamethoxam 75 SG (A9549C) - Magnitude of the Residues in Leaves, Flowers, Pollen, and Nectar of Cucumbers, Representative Commodity of Cucurbit Vegetables, EPA Crop Group 9, in California, DACO: 9.9



PMRA Document Number	Reference
2479590	2014, Thiamethoxam FS (A9807F) - A Field Study to Evaluate Side Effects on Red Mason Bees ( <i>Osmia bicornis</i> L.) in Winter Oil Seed Rape in Germany (Tubingen, Kraichtal) and France (Alsace), DACO: 9.2.9
2487496	2014, Thiamethoxam - Effects on homing behaviour of honeybees foraging on treated oilseed rape - Final Report Amendment 2, DACO: 9.9
2487497	2014, Thiamethoxam - Effects on bumble bee colonies foraging on treated oilseed rape - Final Report Amendment 2, DACO: 9.9
2499626	2009, Thiamethoxam - Thiamethoxam (CGA293343) - A Field Study with Thiamethoxam (CGA293343) - A Field Study with A9700B + A9638A Treated Maize Seed, Investigating Effects on Honeybees ( <i>Apis mellifera</i> L.) over Four Years in Lorraine (France) - Final Report, DACO: 9.2.4.3
2529337	2014, Thiamethoxam - Chronic Larval Toxicity Test on the Honey bee ( <i>Apis mellifera</i> L.) in the Laboratory, DACO: 9.9
2533585	Final Report on the Development of Honey Colonies in Saskatchewan Foraging on Glyphosate Tolerant Canola Treated with Helix(R) XTra Seed Treatment Containing Thiamethoxam, DACO: 9.2.9,9.9
2544882	2012, Thiamethoxam FS (A9700B) - A Field Study with treated Maize Seeds, Investigating the Effects of Residues from Dust during Drilling, Residues in Guttation Liquid and Flowering Maize, on the Honeybee ( <i>Apis mellifera</i> L.) in Lorraine, France in 2010, DACO: 9.2.4.3
2544884	2012, Thiamethoxam FS (A9700B) - A Field Study with treated Maize Seeds, Investigating the Effects of Residues from Dust during Drilling, Residues in Guttation Liquid and Flowering Maize, on the Honeybee ( <i>Apis mellifera</i> L.) in Alsace, France in 2010, DACO: 9.2.4.3
2549385	2012, Thiamethoxam FS (A9700B) - A Field Study with treated Maize Seeds, Investigating the Effects of Residues from Dust during Drilling, Residues in Guttation Liquid and Flowering Maize, on the Honeybee ( <i>Apis mellifera</i> L.) in Stade, Germany in 2010, DACO: 9.2.4.3
2554231	2015, Thiamethoxam 40 WG (A11963C) and 5FS (A9765N) - Magnitude of Residues in Leaves, Flowers, Pollen, Nectar and Extra Floral Nectar of Cotton Plants After Foliar Application with Centric(R) 40WG in California or After Application as a Seed Treatment with Cruiser(R) 5FS - Final Report, DACO: 9.9
2586559	2015, Thiamethoxam Technical - Honey Bee Brood and Colony Level Effects Following Thiamethoxam Intake via Treated Sucrose Solution in a Field Study in North Carolina - FINAL REPORT, DACO: 9.2.4.3,9.9
2694872	2016, Thiamethoxa/MetalaxyI-M/Fludioxonil FS (A9807F) - A field study to evaluate side effects on red mason bees ( <i>Osmia bicornis</i> L.) in winter oil seed rape in Germany (Niefern), DACO: 9.9
2694873	2016, Thiamethoxam/MetalaxyI-M/Fludioxonil FS (A9807F) - A field study to evaluate side effects on red mason bees ( <i>Osmia bicornis</i> L.) in winter oil seed rape in Germany (Tubingen), DACO: 9.9

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2694875	2016, Thiamethoxam - Honey bee ( <i>Apis mellifera</i> L.) larval toxicity test (repeated exposure through to adult emergence) Final report amendment 1, DACO: 9.9
2702496	2013, Thiamethoxam - Assessment of Subchronic Effects to the Honey Bee, <i>Apis mellifera</i> L., in a 10-Day Laboratory Feeding Test, DACO: 9.2.4
2766425	2015, Thiamethoxam FS (A9807F) - A Field Study to Investigate the Effects of Residues in Guttation Fluid on Honeybees ( <i>Apis mellifera</i> L.) in Winter Oil Seed Rape in Germany (Niefern), DACO: 9.2.4
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2766427	2017, Thiamethoxam/Metalaxyl-M/Fludioxonil FS (A9807F) - A Field Study to Evaluate Side Effects on Red Mason Bees ( <i>Osmia bicornis</i> L.) in Winter Oil Seed Rape in Germany (Celle), DACO: 9.2.4

## **B. Additional Information Considered**

### **B.1 Published Information**

#### **B.1.0 Environmental Assessment**

##### **B.1.1 Environmental Fate and Effects Assessment**

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-	Botias et al., 2017. Quantifying exposure of wild bumblebees to mixtures of agrochemicals in agricultural and urban landscapes. <i>Environmental Pollution</i> <a href="http://dx.doi.org/10.1016/j.envpol.2017.01.001">http://dx.doi.org/10.1016/j.envpol.2017.01.001</a> . DACO: 9.2.4.7
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## B.2 Unpublished Information

### B.2.0 Environmental Assessment

#### B.2.1 Environmental Fate and Effects Assessment

N/A

#### B.2.2 Water Monitoring Assessment

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