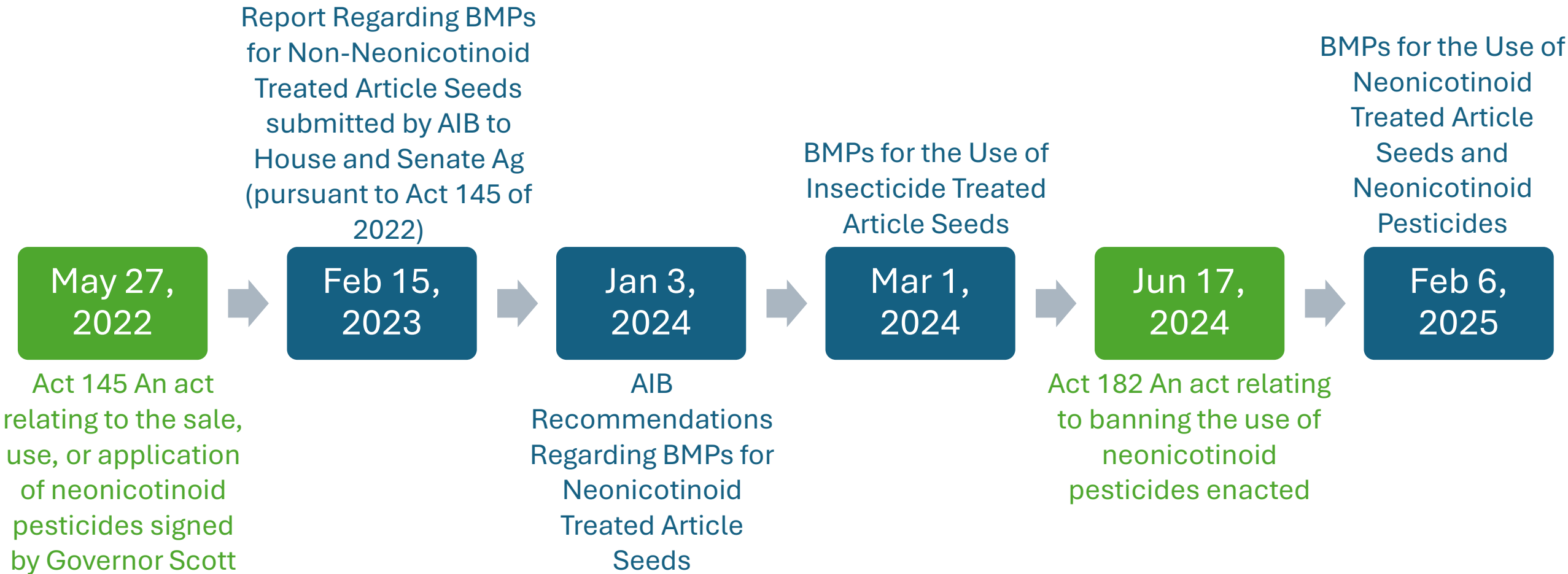


# Best Management Practices for the Use of Neonicotinoid Treated Article Seeds and Neonicotinoid Pesticides

# NEONIC BMP REPORT TIMELINE



# NEONIC BMP DEVELOPMENT

- AIB members previously consulted with AAFM to fulfill the responsibility outlined in Act 145 of 2022 and provide recommendations for BMPs for the use of treated article seeds in the state
  - [Best Management Practices for the Use of Insecticide Treated Article Seeds](#) – submitted to House and Senate Agricultural committees March 1, 2024
- Reviewed a comprehensive list of neonicotinoid treated seed BMPs and neonicotinoid pesticide BMPs compiled by AAFM

# NEONIC BMP RESOURCES

## Neonicotinoid BMPs Available

### Treated Seed BMPs

American Seed Trade Association (ASTA) – Crop Life America (CLA) The Guide to Seed Treatment Stewardship. [ASTA SeedGuide Farmers Update2021.pdf \(seed-treatment-guide.com\)](#)

Health Canada, Pollinator Protection and Responsible Use of Insecticide Treated Seed. March 2015. [treated\\_seed-somences\\_traitees-eng.pdf \(canada.ca\)](#)

Health Canada, Protecting pollinators when using treated seed - best management practices. Amended version - May 2023. [Protecting pollinators when using treated seed - best management practices](#)

Ontario Environment & Energy, [Best management practices when using insecticide treated seed](#)

Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. [HBHC\\_Corn\\_022020.pdf \(honeybeehealthcoalition.org\)](#)

Honey Bee Health Coalition, Best Management Practices (BMPs) to Protect Honey Bees and Other Pollinators in Soybean Fields. February 2020. [HBHC\\_Soybean\\_022020.pdf \(honeybeehealthcoalition.org\)](#)

Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Neonicotinoid Insecticide-Treated Seed. May 2019. [Stewardship Guidelines and Best Management Practices for Neonicotinoid Insecticide-Treated Seed \(state.mn.us\)](#)

Minnesota Pollution Control Agency, Disposal of Treated Seeds. April 2022. [Treated Seeds \(state.mn.us\)](#)

Stoner, K. Connecticut Agricultural Experiment Station. Best Management Practices for Farmers Using Seeds Treated with Neonicotinoid Insecticides. [BMPhandlingNeonicotinoidTreatedSeedspdf.pdf \(ct.gov\)](#)

Corn Dust Research Consortium (CDRC), Executive Summary and Recommendations. July 2017. [CDRC-Executive-Summary-October-2017.pdf \(pollinator.org\)](#)

### General Neonicotinoid BMPs

Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. [Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid | WRL Digital Asset Management \(mnpals.net\)](#)

Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Home and Residential Use of Neonicotinoid Pesticides. May 2019. [Home and Residential Use of Neonicotinoid Insecticides \(state.mn.us\)](#)

BMP Type	Best Practice	Sources
IPM	Use cultural, physical, and biological controls and select insect resistant/tolerant crop varieties to avoid or reduce pest risk.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. <a href="#">Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)</a> , Turf & Ornamental Best Management Practices for Pollinator Protection, NE Vegetable Management Guide 2024
IPM	Scout fields regularly and use economic thresholds to help determine if, when, and where to apply	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. <a href="#">Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)</a> , Best Management Practices for Vermont Golf Courses Best Management Practices for Vermont Golf Courses, second edition. 2022. <a href="#">vermont-bmps.pdf (gcsaa.org)</a> , Turf & Ornamental Best Management Practices for Pollinator Protection, NE Vegetable Management Guide 2024
IPM	Use hot-spot spraying and banding where appropriate to reduce the amount of pesticide applied.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. <a href="#">Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)</a>
IPM	Rotate clothianidin and imidacloprid with other insecticides with different mode of action, such as synthetic pyrethroids, organophosphates, and insect growth regulators that are known to be effective.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. <a href="#">Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)</a> , NE Vegetable Management Guide 2024
IPM	Avoid a sequential foliar application of clothianidin/imidacloprid following a seed, soil, or foliar application of clothianidin/imidacloprid.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. <a href="#">Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)</a>
IPM	Consider using precision application technology (e.g., auto-steer, auto-boom shutoff, and variable rate sprayer) to avoid overspray, spray overlap, and higher than recommended application rates.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. <a href="#">Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)</a>
IPM, Pollinator Protection	Avoid using pesticides or tank mixing pesticides and adjuvants that are known to synergize with each other creating a higher risk to pollinators.	Cornell University, A Guide to Reducing Pesticide Risk to Bees in Tree fruit Orchards. 2023. <a href="#">Pesticide Decision Guide - 2023 - Orchards.pdf</a> , Cornell University, A Pesticide Decision Making Guide to Protect Pollinators in Landscape, Ornamental, and Turf Management. 2019.
IPM	Use spot sprays, perimeter trap crop treatments, refuge plantings, and other methods that prevent the entire field or population from being treated to help preserve susceptible individuals.	NE Vegetable Management Guide 2024
IPM, Pollinator Protection	Time the application so that the most vulnerable insect life stage is exposed to the spray.	NE Vegetable Management Guide 2024



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

## • Section 1

- 1.01 Enabling Legislation: 6 V.S.A. § 1105a(a)(1) and (c)(1)
  - Intended to be harmonious with Federal and State law and the Vermont Rule for Control of Pesticides
  - If amendments occur and laws/rules are not consistent or conflict then the following order of precedence applies:
    - 1) federal law (when it preempts state law or incorporates mandatory label requirements),
    - 2) state statute,
    - 3) Vermont Rule for Control of Pesticides, and
    - 4) these rules.
- 1.02 Purpose: BMPs for appropriate use of neonicotinoid treated seeds and neonicotinoid pesticides. **Unless otherwise stated, these practices are recommended best practices to be used whenever reasonable and practical.**

### § 1105a. Treated articles; powers of Secretary; best management practices

(a) The Secretary of Agriculture, Food and Markets, upon the recommendation of the Agricultural Innovation Board, may adopt by rule:

(1) best management practices (BMPs), standards, procedures, and requirements relating to the sale, use, storage, or disposal of treated articles the use of which the Agricultural Innovation Board has determined will have a hazardous or long-term deleterious effect on the environment, presents a likely risk to human health, or is dangerous;

(c)(1) Under subsection (a) of this section, the Secretary of Agriculture, Food and Markets, after consultation with the Agricultural Innovation Board, shall adopt by rule BMPs for the use in the State of:

(A) neonicotinoid treated article seeds when used prior to January 1, 2031;

(B) neonicotinoid treated article seeds when the Secretary issues a written exemption order pursuant to section 1105b of this chapter authorizing the use of neonicotinoid treated article seeds;

(C) neonicotinoid pesticides when the Secretary issues a written exemption order pursuant to section 1105c of this chapter authorizing the use of neonicotinoid pesticides; and

(D) the agricultural use after July 1, 2025 of neonicotinoid pesticides the use of which is not otherwise prohibited under law.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- **Section 2. Definitions**

- Most terms are defined in statute or the Vermont Rule for Control of Pesticides
- Some terms needed addition of “treated article seed” or treated seed applicable language

- **Section 3. BMPs for the Use of Neonicotinoid Treated Article Seeds (NTS)**

- 3.01: shall apply to use of NTS when used prior to Jan 1, 2031 and when used under valid exemption order



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- (c)(1) Under subsection (a) of this section, the Secretary of Agriculture, Food and Markets, after consultation with the Agricultural Innovation Board, shall adopt by rule BMPs for the use in the State of:
  - (A) neonicotinoid treated article seeds when used prior to January 1, 2031;
  - (B) neonicotinoid treated article seeds when the Secretary issues a written exemption order pursuant to section 1105b of this chapter authorizing the use of neonicotinoid treated article seeds;
  - (C) neonicotinoid pesticides when the Secretary issues a written exemption order pursuant to section 1105c of this chapter authorizing the use of neonicotinoid pesticides; and
  - (D) the agricultural use after July 1, 2025 of neonicotinoid pesticides the use of which is not otherwise prohibited under law.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- **Section 3.** BMPs for the Use of Neonicotinoid Treated Article Seeds (NTS)
  - 3.02: should comply with NTS label requirements (if this rule conflicts, label language applies)
  - 3.03 should follow the directions and requirements on NTS seed bag label:
    - Proper handling, storage, use, and disposal
    - Recommended rate and depth of planting
    - Hazard statements related to pollinators



# EXAMPLE SEED BAG LABEL



AcreMax<sup>®</sup>

ABOVE

Fungicide, Insecticide, Nematicide  
Seed Treatment



NOTICE: See important Product Use Information on back of tag.

## MAJOR COMPONENT :

This seed is treated 0.0033 lb ai ethaboxam, 0.0023 lb ai inpyrfluxam and 0.0018 lb ai metalaxyl (all per 80,000 seeds), and ipconazole fungicides, clothianidin (0.25 mg ai/seed) and chlorantraniliprole insecticide (0.25 mg ai/seed; 0.044 lb ai/80,000 seed) insecticides, and *Bacillus amyloliquefaciens* strains PTA-4838 and MBI-600. 09/22

## REFUGE COMPONENT :

This seed is treated at the manufacturer's recommended rates with fludioxonil, mefenoxam, thiabendazole, ethaboxam, ipconazole, and azoxystrobin fungicides, clothianidin (1.25 mg ai/seed) insecticide, *Bacillus firmus* I-1582, and *Bacillus amyloliquefaciens* strain MBI 600. 11/21

# EXAMPLE SEED BAG LABEL

**CAUTION-TREATED SEED: DO NOT USE TREATED SEED FOR FEED, FOOD OR OIL PURPOSES. DO NOT ALLOW CHILDREN, PETS, OR LIVESTOCK TO HAVE ACCESS TO TREATED SEED. STORE AWAY FROM FOOD AND FEEDSTUFFS. DO NOT USE EMPTY SEED BAGS FOR ANY OTHER PURPOSE.**

Excess treated seed may be used for ethanol production only if (1) byproducts are not used for livestock feed and (2) no measurable residues of pesticide remain in ethanol byproducts that are used for agronomic practice.

**Safety & Health:** Wear long-sleeved shirt, long pants, shoes and socks, and chemical resistant gloves made out of: barrier laminate, butyl rubber  $\geq 14$  mils, nitrile rubber  $\geq 14$  mils, neoprene rubber  $\geq 14$  mils, polyvinyl chloride  $\geq 14$  mils, or viton  $\geq 14$  mils. Contains microorganisms. Microorganisms have the potential to elicit allergic reactions. For sensitized individuals, use appropriate personal protective equipment (PPE) to reduce exposure to treated seed. For more information contact provider at 1-800-992-5994. **Environmental:**

The compound is toxic to birds and mammals. Treated seeds exposed on soil surface may be hazardous to wildlife, including bird, mammals, and aquatic invertebrates. To reduce seed dust which can drift onto blooming crops or weeds, ensure that planting equipment is functioning properly in accordance with manufacturer's recommendations. Plant treated seed into the soil to the recommended minimum depth or greater to minimize exposure. DO NOT plant treated seed by broadcasting to the soil surface. Ensure that all planted seeds are thoroughly incorporated by the planter during planting; additional incorporation may be required to thoroughly cover exposed seeds. Cover or collect treated seeds spilled during loading and planting, in particular at row ends and field corners. Dispose of all excess treated seed. Left over treated seed may be double-sown around the headland or buried away from water sources in accordance with local requirements. Do not contaminate water bodies when disposing of planting equipment washwaters. Dispose of seed packaging or containers in accordance with local requirements. Do not use empty seed bags for any other purpose. **Pollinators:** Compounds in this product are highly toxic to bees exposed directly (contact).



# EXAMPLE SEED BAG LABEL

other purpose. **Pollinators:** Compounds in this product are highly toxic to bees exposed directly (contact). Ensure that planting equipment is functioning properly in accordance with manufacturing recommendations to minimize seed coat abrasion during planting to reduce dust which can drift to blooming crops or weeds. Restricted Entry Interval: Ipconazole: After seeds have been planted, do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours. Exception: Once seeds are planted and covered by soil or other planting media, the Worker Protection Standard (WPS) allows workers to enter the treated area without restriction **Groundwater Advisory:** The seed treatments applied to this seed are known to leach through soil into groundwater under certain conditions as a result of label use, or have properties and characteristics associated with chemicals detected in groundwater. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. **Surface Water Advisory:** This product contains chlorantraniliprole which may impact surface water quality due to runoff of rainwater. This is especially true for poorly draining soils and soils with shallow ground water. Chlorantraniliprole is classified as having high potential for reaching surface water via runoff for several months or more after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of chlorantraniliprole from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. **Additional Information:** Treated seed must be planted into the soil at a depth greater than 1.5 to 2 inches. **Restrictions:** Clothianidin: Regardless of



# EXAMPLE SEED BAG LABEL

be planted into the soil at a depth greater than 1.5 to 2 inches. **Restrictions:** Clothianidin: Regardless of method of application (seed treatment, soil or foliar), DO NOT apply more than 0.1 lbs of active ingredient clothianidin per acre per year. Do not plant clothianidin-treated rice in areas where rice/crawfish aquaculture practices are in place or in or near fish farms, shrimp, prawn or crab pond or nursery operations. Clothianidin is not to be followed by a spray treatment of another neonicotinoid insecticide. Follow approved guidelines established for insect resistance management by consulting your local extension pest management expert. Lumiscend Pro: The maximum yearly total application rate for corn is 0.011 lb ai/A for metalaxyl, 0.0117 lb ai/A for ethaboxam, and 0.044 lb ai/A for inpyrfluxam (including seed treatment and in-furrow applications). **Grazing and Plantback:** Do not graze or feed soybean forage and hay to livestock. Corn forage may not be grazed until 30 days after planting. In the event of crop failure or harvest of a crop grown from seed treated with Maxim Quattro, crops may be replanted according to the following schedule: Immediate: Alfalfa, Cereal Grains: Barley, Corn, Oat, Rye, Triticale and Wheat, Cucurbit Vegetables Crop Group 9, Head and Stem Brassica Crop Subgroup 5A, Onion, Bulb, Crop Subgroup 3-07A, Peas, Dried Shelled: Chickpea (Garbanzo Bean), Field Pea, Lentil, and Pigeon Pea, Root Vegetables (except Sugarbeet) Crop Subgroup 1B, Soybean, Spinach, Sweet Potato. For any other crops the minimum plantback interval is 30 days from the date seeds treated with Maxim Quattro were planted. In the event of crop failure or harvest of a crop grown from seed treated with **Clothianidin:** Immediate Plant-back: cereal grains, field corn, popcorn, sweet corn, rapeseed, canola, soybeans, and root and tuber vegetables; 30 day plant back: grasses, non-grass animal feeds, dry beans, dry peas; 8 month plant back: sugar cane; 12 month plant back: any crops without an earlier plant back interval. **Chlorantraniliprole:** Field corn, wheat, and triticale seed treated with Lumivia may be replanted if an emergency replanting due to a crop failure occurs. Crops on the Lumivia label and the following crops or crop groups may be planted immediately following harvest: Artichoke, globe; Asparagus; Banana/Plantain; Brassica (Cole) Leafy Vegetables (Crop Group 5); Bulb Vegetables (Crop Group 3-07); Bushberry subgroup (Crop subgroup 13-07B); Cacao; Caneberry subgroup (Berry and Small Fruit Crop Group subgroup 13-07A); Cereal Grains (Crop Group 15); Forage, Fodder, and Straw of Cereal Grains (Crop Group 16); Citrus (Crop



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 3.04: Should minimize dust generation and potential drift/non-target exposure from the seed:
  - (a) avoid planting during windy conditions (>15mph) and when wind is blowing toward a nearby surface water or flowering crops;
  - (b) handle seed bags carefully during transport and loading to reduce abrasion and dust generation;
  - (c) use dust-reducing seed lubricants at appropriate rates and avoid using lubricants that increase dust due to abrasion;
  - (d) ensure the planter is calibrated and functions properly;
  - (e) avoid or reduce releasing excess dust from a seed bag, including by loading planters at least 10 yards inside field borders;
  - (f) clean planting equipment without using compressed air;

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 3.04: Should minimize dust generation and potential drift/non-target exposure from the seed:
  - (g) clean planting equipment without contaminating surface water and pollinator attractive habitats;
  - (h) dispose of excess rinse water from cleaning within the crop field and without causing surface ponding;
  - (i) do not broadcast plant or scatter seeds to soil surfaces;
  - (j) ensure all planted seeds are thoroughly incorporated during planting and evaluate whether additional incorporation is necessary after initial planting to thoroughly cover any exposed seeds; and
  - (k) collect any seeds spilled during loading or planting and store them for subsequent planting in accordance with section 3.07, or dispose of any seeds spilled during loading or planting in accordance with section 3.08.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 3.05: Should use Integrated Pest Management (IPM) Practices:
  - (a) utilize multiple pest management methods (cultural, mechanical, biological) to avoid or reduce pest risk, whenever feasible;
  - (b) learn which crop production practices increase or reduce risk of insect pest damage; and
  - (c) choose an appropriate rate of neonicotinoid seed treatment that can effectively manage target pests

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 3.06: Communication & Continuous Education:
  - (a) A person using a neonicotinoid treated article seed should provide at least 48 hours, but no more than 90 days, advance notice to all apiculturists who have an established apiary on the premises, provided that hive locations and apiculturist's contact information are available to the person using a neonicotinoid treated article seed.
  - (b) A person using a neonicotinoid treated article seed should attend reasonably available education and outreach programs, including those provided by university extension services or the seed industry related to best management practices for using neonicotinoid treated article seeds.



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 3.07: Storage – a person using NTS should:
  - (a) return neonicotinoid treated article seeds that are spilled during loading or planting to the original seed lot container; and
  - (b) store neonicotinoid treated article seeds away from food and feed and protect and secure the seeds to prevent unauthorized access by people and wildlife.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 3.08: Disposal:
  - (a) Unless being used for storage in accordance with section 3.07, a person using a neonicotinoid treated article seed should dispose of the neonicotinoid treated article seeds and/or containers:
    - (1) in accordance with the seed bag label and local requirements;  
or
    - (2) by returning to the manufacturer.
  - (b) A person using a neonicotinoid treated article seed should not:
    - (1) recycle a neonicotinoid treated article seed container;
    - (2) compost any neonicotinoid treated article seed;
    - (3) burn or otherwise incinerate any neonicotinoid treated article seed in a stove inside a residence or outbuilding; and/or
    - (4) use a treated seed for fuel or ethanol production purposes.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- **Section 4. BMPs for the Use of Neonicotinoid Pesticides**

- **4.01: Applicability**

- (a) The provisions of this section apply to the use of neonicotinoid pesticides used after July 1, 2025 under a written exemption order issued by the Secretary unless otherwise provided for in an exemption order.
- (b) The provisions of this section apply to the agricultural use of a neonicotinoid pesticide after July 1, 2025, the use of which is not otherwise prohibited by law.
- (c) In addition to the provisions of this section, any use of a neonicotinoid pesticide shall be made in accordance with product labels and the Vermont Rule for Control of Pesticides.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.02 : Should use Integrated Pest Management (IPM) Practices:
  - (a) learn which crop production practices, including crop variety selection and crop rotation, increase or reduce the risk of insect pest damage;
  - (b) scout crops regularly and use economic thresholds to help determine if, when, and where, to apply;
  - (c) utilize multiple pest management methods (cultural, mechanical, biological) to avoid or reduce pest risk, whenever feasible;
  - (d) use perimeter trap-crop treatments, refuge plantings, and other methods that prevent the entire field or population from being treated to help preserve susceptible non-target species;
  - (e) choose the lowest appropriate labeled application rate that can effectively manage target pests without overapplication or risking increased insecticide resistance;
  - (f) time applications to target the most vulnerable life-stage of the target pest; and
  - (g) target applications to specific areas of a crop or field utilizing spot spraying, directed sprays, and band applications based on scouting.



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.03 : Should implement measures to reduce drift:
  - (a) use a nozzle that produces medium or coarser droplet sizes;
  - (b) apply during favorable weather conditions;
  - (c) use a drift retardant or spray additive within label guidance;
  - (d) use a shielded sprayer, provided that the shield does not compromise uniform deposition;
  - (e) maintain at least a 25-foot spray buffer zone between the application area and surface water for ground applications, and a 150-foot spray buffer zone for aerial applications;
  - (f) maintain a boom height no more than four feet above the canopy for ground applications;
  - (g) comply with Vermont Rule for Control of Pesticides and all applicable permit conditions for aerial applications;
  - (h) spray when wind direction is pointed away from non-target areas of concern, such as pollinator attractive plants; and
  - (i) ensure that application equipment is calibrated and functions properly.

# BEST MANAGEMENT PRACTICES FOR NEONICOTINOIDS

- 4.03 : Should
  - (a) use a nozzle
  - (b) apply during
  - (c) use a drift
  - (d) use a shield to prevent deposition
  - (e) maintain a buffer surface width around aerial application
  - (f) maintain a buffer around application
  - (g) comply with local conditions
  - (h) spray when bees are not active, such as p.m.
  - (i) ensure that

## PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.



Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at: <http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>.

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to: [www.aapco.org/officials.html](http://www.aapco.org/officials.html).

Pesticide incidents should also be reported to the National Pesticide Information Center at: [www.npic.orst.edu](http://www.npic.orst.edu) or directly to EPA at: [beekill@epa.gov](mailto:beekill@epa.gov).

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# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.03 : Should implement measures to reduce drift:

## Wind Speed Restrictions

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size, canopy and equipment specifications, determine drift potential at any given wind speed. Do not apply when winds are greater than 15 mph and avoid gusty and windless conditions. Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.

## Restrictions During Temperature Inversions

Do not make aerial or ground applications during temperature inversions. Drift potential is high during temperature inversions. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical mixing.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.03 : Should implement measures to reduce drift:

## **Airblast (Air Assist) Specific Recommendations for Tree Crops and Vineyards**

Airblast sprayers carry droplets into the canopy of trees/vines via a radially or laterally directed air stream. The following specific drift management practices should be followed.

- Adjust deflectors and aiming devices so that the spray is only directed into the canopy.
- Block off upward pointed nozzles when there is no overhanging canopy.
- Use only enough air volume to penetrate the canopy and provide good coverage.
- Do not allow the spray to go beyond the edge of the cultivated area (i.e., turn off sprayer when turning at end rows).
- Only spray inward toward the orchard or vineyard for application to the outside rows.

- (g) comply with Vermont Rule for Control of Pesticides and all applicable permit

## **No Spray Zone Requirements for Soil and Foliar Applications**

Do not apply by ground within 25 feet or by air within 150 feet of lakes, reservoirs, rivers, permanent streams, marshes, or natural ponds, estuaries, and commercial fish ponds.

- (i) ensure that application equipment is calibrated and functions properly.



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.04 : Should implement measures to prevent spills:
  - (a) mix and load away from waterbodies and ditches;
  - (b) use a designated spill containment surface or otherwise maintain a 25-foot buffer from potential surface to groundwater conduits; and
  - (c) maintain an incident response plan.

## **Mixing and Loading Requirements**

To avoid potential contamination of groundwater, the use of a properly designed and maintained containment pad for mixing and loading of any pesticide into application equipment is recommended. If a containment pad is not used, maintain a minimum distance of 25 feet between mixing and loading area and potential surface to groundwater conduits such as field sumps, uncased well heads, sinkholes, or field drains.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.05 : Should implement measures to prevent runoff:
  - (a) avoid applications during rain or when soil is saturated;
  - (b) avoid foliar applications if rain is predicted in the next 24 or 48 hours;
  - (c) avoid disposal of leftover pesticide down a drain or in a single spot in a field;
  - (d) maintain grass or vegetative buffers near tile outlets, in drainage ways, and along field boundaries; and
  - (e) implement residue management practices (e.g. conservation tillage, cover crops, filter strips, or vegetative buffers) as applicable to slow runoff.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.05 : Should implement measures to prevent runoff:
  - (a) avoid applications during rain or when soil is saturated;

## **Runoff Management**

Do not cultivate within 10 feet of the aquatic areas to allow growth of a vegetative filter strip. When using Tide Imidacloprid 4F on erodible soils, Best Management Practice for minimizing runoff should be employed. Consult your local Natural Resources Conservation Service for recommendations in your use area.

- spot in a field; maintaining grass or vegetative buffers near tile outlets, in drainage ways, and along field boundaries; and
  - (d) implement residue management practices (e.g. conservation tillage, cover crops, filter strips, or vegetative buffers) as applicable to slow runoff.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.06 : Should implement measures to prevent exposure to pollinators:
  - (a) avoid applications during unusually low temperatures or when dew is forecast;
  - (b) communicate with apiculturists and growers to determine the presence of potential hives or colonies on site;
  - (c) follow label restrictions for the maximum amount of neonicotinoid allowed per acre, per application, per season, or per year;
  - (d) consider that neonicotinoids applied as seed treatments count towards maximum application rates; and
  - (e) leave a buffer strip of two-to-three feet between neonicotinoid treated turf and the border of any landscape bed to minimize the potential of flowering ornamental roots taking up neonicotinoids.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.06 : Should implement measures to prevent exposure to

## **DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

See individual crops for specific pollinator protection application restrictions. If none exist under the specific crop, for foliar applications, follow these application directions for crops that are contracted to have pollinator services or for food/feed & commercially grown ornamentals that are attractive to pollinators:

### **FOR CROPS UNDER CONTRACTED POLLINATION SERVICES**



Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless the following condition has been met:

If an application must be made when managed bees are at the treatment site, the beekeeper providing the pollination services must be notified no less than 48-hours prior to the time of the planned application so that bees can be removed, covered or otherwise protected prior to spraying.



**FOR FOOD/FEED CROPS AND COMMERCIALLY GROWN ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT ARE ATTRACTIVE TO POLLINATORS**

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless one of the following conditions is met:

- The application is made to the target site after sunset
- The application is made to the target site when temperatures are below 55°F
- The application is made in accordance with a government-initiated public health response
- The application is made in accordance with an active state-administered apiary registry program where beekeepers are notified no less than 48-hours prior to the time of planned application so that the bees can be removed, covered or otherwise protected prior to spraying.
- The application is made due to an imminent threat of significant crop loss, and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be made to notify beekeepers no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.

**Non-Agricultural Uses:**

Do not apply while bees are foraging. Do not apply this product to plants that are flowering. Only apply after all flower petals have fallen off.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the Agency responsible for pesticide regulation.

NEONICOTINAMIDES  
NEONICOTINAMIDES

• 4.06  
pollinators

(a) a

(b) c

(c) f

(d) c

(e) u



# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- 4.06 • Should implement measures to prevent exposure to

## 5.04 Protection of Bees

- (a) No person shall apply a pesticide to a flowering crop, including alfalfa, apple, blueberry, clover, pumpkin, raspberry, squash, or trefoil without prior notification of at least 48 hours to an apiculturist who has an established apiary on the premises.
- (b) A person hiring a commercial applicator for an application under Section 5.04(a) shall notify, or cause to be notified, the apiculturist at least 48 hours prior to the application.
- (c) A person applying a pesticide that is highly toxic to bees shall:
  - (1) apply the pesticide during periods and conditions of least exposure, such as early morning or late evening; and when winds are less than nine mph; and
  - (2) include a 50-foot buffer from pollinator foraging sites, such as natural and semi-natural areas or intentional pollinator plantings or a 20-foot-wide non-pollinator-attractive vegetative barrier higher than the spray release height with an established 60% plant density.
- (d) A person shall avoid the application of a fungicide or soil fumigant to pollinator-attractive plants when in bloom.

potential of flowering ornamental roots taking up neonicotinoids.

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

## STRAWBERRY - foliar treatment

Pests Controlled	Rate - Fluid ounces per acre
Aphids, Spittlebugs, Whiteflies	1.5
<b>Restrictions</b>	
<ul style="list-style-type: none"><li>Pre-Harvest Interval (PHI) - 7 days</li><li>Minimum interval between applications - 5 days</li><li>Maximum Tide Imidacloprid 4F allowed per calendar year when making foliar applications - 4.5 fluid ounces per acre (0.14 lb. AI per acre)</li><li>Do not apply during bloom or within 10 days prior to bloom or when bees are foraging.</li></ul>	

- (c) prevent exposure to low temperatures or when growers to determine the neonicotinoid allowed per acre per year;
- (d) consider that neonicotinoids towards maximum application
- (e) leave a buffer strip of two-to-treated turf and the border of potential of flowering ornamentals

to prevent exposure to low temperatures or when growers to determine the

## POME FRUIT - foliar treatment

Crops of Crop Group 11 including - Apple, Crabapple, Loquat, Mayhew, Pear (including Oriental pear), Quince

Pests Controlled	Rate - fluid ounces per acre
Leafhoppers	1.6-3.2
Aphids (except Woolly apple aphid), Apple maggot, Leafminers, San Jose scale	3.2
<b>FOR PEAR ONLY</b> Mealybugs, Pear psylla	8
<b>Restrictions -</b>	
<ul style="list-style-type: none"><li>Pre-Harvest Interval (PHI) - 7 days</li><li>Minimum interval between applications - 10 days</li><li>Maximum Tide Imidacloprid 4F allowed per calendar year when making foliar applications - 16.0 fluid ounces/Acre (0.5 lb. AI/Acre).</li><li>Do not apply pre-bloom or during bloom or when bees are foraging.</li></ul>	

# BEST MANAGEMENT PRACTICES FOR THE USE OF NEONICOTINOID TREATED ARTICLE SEEDS AND NEONICOTINOID PESTICIDES – PROPOSED RULE

- **Section 5.** Severability
- **Section 6.** Effective Date

# STATUS OF RULEMAKING PROCESS

- 2/6/2025 – sent proposed rule to Committees
- 4/2/25 - sent proposed rule to other Agencies potentially impacted by the rule
- Anticipate filling with ICAR by the end of the month to attend 5/12/25 ICAR meeting

# Neonicotinoid BMPs Available

## Treated Seed BMPs

American Seed Trade Association (ASTA) – Crop Life America (CLA) The Guide to Seed Treatment Stewardship. [ASTA\\_SeedGuide\\_Farmers\\_Update2021.pdf \(seed-treatment-guide.com\)](#)

Health Canada, Pollinator Protection and Responsible Use of Insecticide Treated Seed. March 2015. [treated\\_seed-semences\\_traitees-eng.pdf \(canada.ca\)](#)

Health Canada, Protecting pollinators when using treated seed - best management practices. Amended version - May 2023. [Protecting pollinators when using treated seed - best management practices](#)

Ontario Environment & Energy, [Best management practices when using insecticide treated seed](#)

Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. [HBHC\\_Corn\\_022020.pdf \(honeybeehealthcoalition.org\)](#)

Honey Bee Health Coalition, Best Management Practices (BMPs) to Protect Honey Bees and Other Pollinators in Soybean Fields. February 2020. [HBHC\\_Soybean\\_022020.pdf \(honeybeehealthcoalition.org\)](#)

Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Neonicotinoid Insecticide-Treated Seed. May 2019. [Stewardship Guidelines and Best Management Practices for Neonicotinoid Insecticide-Treated Seed \(state.mn.us\)](#)

Minnesota Pollution Control Agency, Disposal of Treated Seeds. April 2022. [Treated Seeds \(state.mn.us\)](#)

Stoner, K. Connecticut Agricultural Experiment Station. Best Management Practices for Farmers Using Seeds Treated with Neonicotinoid Insecticides. [BMPHandlingNeonicotinoidTreatedSeedspdf.pdf \(ct.gov\)](#)

Corn Dust Research Consortium (CDRC), Executive Summary & Recommendations. July 2017. [CDRC-Executive-Summary-October-2017.pdf \(pollinator.org\)](#)

## General Neonicotinoid BMPs

Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. [Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid | WRL Digital Asset Management \(mnpals.net\)](#)

Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Home and Residential Use of Neonicotinoid Pesticides. May 2019. [Home and Residential Use of Neonicotinoid Insecticides \(state.mn.us\)](#)

Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Use of Soil and Foliar-applied Agricultural Neonicotinoid Insecticides. July 2019. [Soil and Foliar Neonicotinoid Guide \(state.mn.us\)](https://state.mn.us/soil-and-foliar-neonicotinoid-guide)

Best Management Practices for Vermont Golf Courses, second edition. 2022. [vermont-bmps.pdf \(gcsaa.org\)](https://gcsaa.org/vermont-bmps.pdf)

National Association of Landscape Professionals Turf & Ornamental Best Management Practices for Pollinator Protection. 2020. [NALP\\_Pollinator\\_BMPs\\_FINAL.pdf \(pesticidestewardship.org\)](https://pesticidestewardship.org/NALP_Pollinator_BMPs_FINAL.pdf)

Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. [HBHC\\_Corn\\_022020.pdf \(honeybeehealthcoalition.org\)](https://honeybeehealthcoalition.org/HBHC_Corn_022020.pdf)

Honey Bee Health Coalition, Best Management Practices (BMPs) to Protect Honey Bees and Other Pollinators in Soybean Fields. February 2020. [HBHC\\_Soybean\\_022020.pdf \(honeybeehealthcoalition.org\)](https://honeybeehealthcoalition.org/HBHC_Soybean_022020.pdf)

Pollinator Partnership, Wojcik, Davies Adams, and Rourke, Securing Pollinator Health and Crop Protection Communication and Adoption of Farm Management Techniques in Four Crops. [Microsoft Word - Securing Pollinator Health and Crop Protection - FINAL 05 26 14-chemigation addition.docx \(pesticidestewardship.org\)](https://pesticidestewardship.org/Microsoft_Word_-_Securing_Pollinator_Health_and_Crop_Protection_-_FINAL_05_26_14-chemigation_addition.docx)

Walgenbach, J. North Carolina State University Extension Entomologist. Pollinator Protection in Apples. [Pollinator-Protection-in-Apples Walgenbach.pdf \(pesticidestewardship.org\)](https://pesticidestewardship.org/Pollinator-Protection-in-Apples_Walgenbach.pdf)

Honey Bee Health Coalition, Apple Best Management Practices. [USApple-Pollinator-BMPs-Final.pdf \(honeybeehealthcoalition.org\)](https://honeybeehealthcoalition.org/USApple-Pollinator-BMPs-Final.pdf)

Cornell University, A Guide to Reducing Pesticide Risk to Bees in Tree fruit Orchards. 2023. [Pesticide Decision Guide - 2023 - Orchards.pdf | Powered by Box](https://pesticidestewardship.org/Pesticide_Decision_Guide_-_2023_-_Orchards.pdf)

Cornell University, A Pesticide Decision Making Guide to Protect Pollinators in Landscape, Ornamental, and Turf Management. 2019. [Pesticide Decision Guide - 2019 - Landscape, Ornamentals, Turf.pdf | Powered by Box](https://pesticidestewardship.org/Pesticide_Decision_Guide_-_2019_-_Landscape,_Ornamentals,_Turf.pdf)

Cornell University, A Guide to Reducing Pesticide Risk to Bees in Small Fruit, Grapes and Hops in New York. 2023. [Pesticide Decision Guide - 2023 - Small Fruit, Grapes, Hops.pdf | Powered by Box](https://pesticidestewardship.org/Pesticide_Decision_Guide_-_2023_-_Small_Fruit,_Grapes,_Hops.pdf)

Cornell University, A Guide to Reducing Pesticide Risk to Bees in Vegetable Agriculture and Field Crops in New York. 2023. [Pesticide Decision Guide - 2023 - Field Crops.pdf | Powered by Box](https://pesticidestewardship.org/Pesticide_Decision_Guide_-_2023_-_Field_Crops.pdf)

North Central IPM Center, Best Management Practices for Turf Care and Pollinator Conservation. 2019. [BMP-for-Pollinators-and-Turf-NCIPM.pdf \(pesticidestewardship.org\)](https://pesticidestewardship.org/BMP-for-Pollinators-and-Turf-NCIPM.pdf)

Horticultural Research Institute, Best Management Practices (BMPs) for Bee Health in the Horticultural Industry. 2017. [HRtor-BMPs-January2017.pdf \(multiscreensite.com\)](https://multiscreensite.com/HRtor-BMPs-January2017.pdf)

Purdue University Extension, Protection Pollinators in Home Lawns and Landscapes. 2016. [Tips for Protecting Pollinators in Home Lawns and Landscapes \(purdue.edu\)](https://purdue.edu/tips-for-protecting-pollinators-in-home-lawns-and-landscapes)



BMP Type	Best Practice	Sources
IPM	Use cultural, physical, and biological controls and select insect resistant/tolerant crop varieties to avoid or reduce pest risk.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Turf & Ornamental Best Management Practices for Pollinator Protection, NE Vegetable Management Guide 2024
IPM	Scout fields regularly and use economic thresholds to help determine if, when, and where to apply	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Best Management Practices for Vermont Golf CoursesBest Management Practices for Vermont Golf Courses, second edition. 2022. vermont-bmps.pdf (gcsaa.org) , Turf & Ornamental Best Management Practices for Pollinator Protection, NE Vegetable Management Guide 2024
IPM	Use hot-spot spraying and banding where appropriate to reduce the amount of pesticide applied.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
IPM	Rotate clothianidin and imidacloprid with other insecticides with different mode of action, such as synthetic pyrethroids, organophosphates, and insect growth regulators that are known to be effective.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , NE Vegetable Management Guide 2024
IPM	Avoid a sequential foliar application of clothianidin/imidacloprid following a seed, soil, or foliar application of clothianidin/imidacloprid.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
IPM	Consider using precision application technology (e.g., auto-steer, auto-boom shutoff, and variable rate sprayer) to avoid overspray, spray overlap, and higher than recommended application rates.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
IPM, Pollinator Protection	Avoid using pesticides or tank mixing pesticides and adjuvants that are known to synergize with each other creating a higher risk to pollinators.	Cornell University, A Guide to Reducing Pesticide Risk to Bees in Tree fruit Orchards. 2023. Pesticide Decision Guide - 2023 - Orchards.pdf , Cornell University, A Pesticide Decision Making Guide to Protect Pollinators in Landscape, Ornamental, and Turf Management. 2019.
IPM	Use spot sprays, perimeter trap crop treatments, refuge plantings, and other methods that prevent the entire field or population from being treated to help preserve susceptible individuals.	NE Vegetable Management Guide 2024
IPM, Pollinator Protection	Time the application so that the most vulnerable insect life stage is exposed to the spray.	NE Vegetable Management Guide 2024

BMP Type	Best Practice	Sources
<b>IPM, Off Target Movement</b>	Use equipment appropriately (appropriate level of pressure on a well-calibrated and frequently maintained sprayer).	Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Use of Soil and Foliar-applied Agricultural Neonicotinoid Insecticides. July 2019. Soil and Foliar Neonicotinoid Guide (state.mn.us) , Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. HBHC_Corn_022020.pdf (honeybeehealthcoalition.org) , Best Management Practices for Vermont Golf CoursesBest Management Practices for Vermont Golf Courses, second edition. 2022. vermont-bmps.pdf (gcsaa.org)
<b>Off Target Movement</b>	Select nozzles that produce medium or coarser droplet sizes (200-400 microns, ASABE S572.I). Use the coarsest droplet size possible without compromising the efficacy.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field
<b>Off Target Movement, Pollinator Protection</b>	Monitor weather and apply during favorable conditions (wind speeds 3 to 15 mph, temperatures <85.F, relative humidity >50%, no temperature inversions, at night if necessary)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Walgenbach, J. North Carolina State University Extension Entomologist. Pollinator Protection in Apples. Pollinator-Protection-in-Apples_Walgenbach.pdf (pesticidestewardship.org)
<b>Off Target Movement</b>	Maintain at least a 25 ft spray buffer zone between the application area and surface water for ground applications and a 150 ft spray buffer zone for aerial applications.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
<b>Off Target Movement</b>	Maintain a boom height no more than 4 ft above the canopy for ground applications and no more than 10 ft above the canopy for aerial applications.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
<b>Off Target Movement</b>	Consider using drift retardants or spray additives within label guidance.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. HBHC_Corn_022020.pdf (honeybeehealthcoalition.org)
<b>Off Target Movement</b>	Consider using shielded sprayers if shields do not compromise uniform deposition.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. HBHC_Corn_022020.pdf (honeybeehealthcoalition.org) , Honey Bee Health Coalition, Apple Best Management Practices. USApple-Pollinator-BMPs-Final.pdf (honeybeehealthcoalition.org) , Honey Bee Health Coalition, Best Management Practices (BMPs) to Protect Honey Bees and Other Pollinators in Soybean Fields. February 2020. HBHC_Soybean_022020.pdf (honeybeehealthcoalition.org)
<b>Off Target Movement, Pollinator Protection</b>	Spray when wind direction is pointed away from non-target areas of concern, e.g. hives and pollinator habitat.	
<b>Off Target Movement, Pollinator Protection</b>	Use field buffers (i.e., beginning your application a certain distance from the edge of the field) as appropriate, especially if hives or plants that flower are close to the field being sprayed.	Honey Bee Health Coalition, Best Management Practices (BMPs) for Pollinator Protection in Field Corn. February 2020. HBHC_Corn_022020.pdf (honeybeehealthcoalition.org)
<b>Off Target Movement</b>	Be Aware of Temperature Inversions	Minnesota Department of Agriculture, Stewardship Guidelines and Best Management Practices for Use of Soil and Foliar-applied Agricultural Neonicotinoid Insecticides. July 2019. Soil and Foliar Neonicotinoid Guide (state.mn.us)

BMP Type		Best Practice	Sources
Off Target Movement	Mix and load pesticides away from waterbodies and ditches and use a designated spill containment surface. If a containment pad is unavailable, maintain a 25 ft distance from potential surface to groundwater conduits.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	Be prepared for potential spills by developing and maintaining an incident response plan.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	DO NOT pour leftover pesticide down a drain or in a single spot in a field.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	Avoid applying during rain or when soil is saturated which favors runoff. Avoid foliar applications if rain is predicted in the next 24 or 48 hours.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement, Label	Construct and maintain a vegetative filter strip at least 10 ft wide between the field edge and nearby down gradient aquatic habitat. Check product labels for exact width requirements, which may vary.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	Maintain grass or vegetation buffers near tile outlets, in drainage ways, and along field boundaries.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	Consider residue management practices such as adopting conservation tillage and planting a cover crop to help slow runoff.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	Avoid practices that lead to soil compaction {e.g., tillage of wet soil} and, in turn, increase runoff.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Off Target Movement	Use soil moisture monitoring techniques, such as sensors, to avoid over-irrigation and runoff.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Label, IPM	Use the lowest labeled application rate that will effectively control the pest. Recommended application rates vary with the target pest species. Avoid applying below labeled rates which can compromise efficacy and favor the development of insecticide resistance.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Label	Follow label restrictions for the maximum amount of clothianidin/imidacloprid allowed per acre, per application, per season, or per year. Pesticide applied as seed treatments counts toward maximum application rates.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Label, IPM	Always follow all label directions and adopt proposed risks mitigation practices when possible.	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net)
Pollinator Protection	Mow the area immediately before application to remove blossoms from flowering weeds or use herbicides to reduce weed populations	Best Management Practices for Vermont Golf CoursesBest Management Practices for Vermont Golf Courses, second edition. 2022. vermont-bmps.pdf (gcsaa.org)	

BMP Type	Best Practice	Sources
Pollinator Protection	If possible, select a pesticide with lowest toxicity to pollinators	Minnesota Department of Agriculture, Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid. March 2023. Water Quality Best Management Practices for Agricultural Use of Clothianidin and Imidacloprid   WRL Digital Asset Management (mnpals.net) , Best Management Practices for Vermont Golf CoursesBest Management Practices for Vermont Golf Courses, second edition. 2022. vermont-bmps.pdf (gcsaa.org) , Turf & Ornamental Best Management Practices for Pollinator Protection, Walgenbach, J. North Carolina State University Extension Entomologist. Pollinator Protection in Apples. Pollinator-Protection-in-Apples_Walgenbach.pdf (pesticidestewardship.org) , Honey Bee Health Coalition, Best Management Practices (BMPs) to Protect Honey Bees and Other Pollinators in Soybean Fields. February 2020. HBHC_Soybean_022020.pdf (honeybeehealthcoalition.org) , Honey Bee Health Coalition, Apple Best Management Practices. USApple-Pollinator-BMPs-Final.pdf (honeybeehealthcoalition.org)
Pollinator Protection	Avoid applications during unusually low temperatures or when dew is forecast	Best Management Practices for Vermont Golf CoursesBest Management Practices for Vermont Golf Courses, second edition. 2022. vermont-bmps.pdf (gcsaa.org)
Pollinator Protection	Leave a buffer strip of 2-3 feet between treated turf and the border of any landscape bed. This will minimize the potential for flowering ornamental roots to take up neonicotinoid insecticides	Purdue University Extension, Protection Pollinators in Home Lawns and Landscapes. 2016. Tips for Protecting Pollinators in Home Lawns and Landscapes (purdue.edu)