STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

BOARD OF PESTICIDES CONTROL

May 12, 2017

Room 118
Marquardt Building
32 Blossom Lane, Augusta, Maine

AGENDA

9:00 AM

1. Introductions of Board and Staff

2. Minutes of the May 12, 2017 Board Meeting

   Presentation By: Cam Lay
   Director

   Action Needed: Amend and/or Approve

3. Consideration of Three Plant Incorporated Protectants (PIP) for Late Blight Control in Potatoes

   J.R. Simplot Company submitted registration requests for three new seed potato products that contain VNT1 protein and feature late blight protection. The Board toxicologist and the Chair of the PIP Technical Committee have reviewed the VNT1 protein technology and are prepared to present and discuss their findings.

   Presentation By: Lebelle Hicks
   Staff Toxicologist

   John Jemison
   Board Member and PIP Technical Committee Chair

   Action Needed: Approve/Disapprove PIP Registration Request or Pursue a Medical Advisory Committee and/or a PIP Technical Committee Review of the Late Blight Resistant PIP Products

CAM LAY, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

4. Syngenta Crop Protection, Inc., Request for FIFRA Section 24(c) Registration for Callisto Herbicide on Lowbush Blueberries in the Bearing and Nonbearing Years

Syngenta Crop Protection, Inc. is requesting a Special Local Need [24(c)] Application to allow use of Callisto® herbicide for broadleaf weed control on low bush blueberries in the bearing and non-bearing years. This request is supported by Dave Yarborough, University of Maine Blueberry Extension Specialist. The expiring 24(c) for Callisto is for use in low bush blueberries during the crop-bearing year. Because the additional applications will be made in the non-bearing year, residues are expected to be below the established tolerance.

Presentation By: Mary Tomlinson
Pesticides Registrar

Action Needed: Approve/Disapprove 24(c) Registration Request

5. Loveland Products, Inc., Request for FIFRA Section 24(c) Registration for Malathion 8 Aquamul on Blueberries

Loveland Products, Inc. is requesting a Special Local Need [24(c)] registration to increase the maximum application rate of Malathion 8 Flowable agricultural insecticide to control spotted wing drosophila (SWD) on high and low bush blueberries. This request is supported by David Yarborough, University of Maine Blueberry Extension Specialist, and is based on economic considerations. The SLN is for the same rate as the current SLN for Gowan Malathion 8 Flowable.

Presentation By: Mary Tomlinson,
Pesticides Registrar

Action Needed: Approve/Disapprove 24(c) Registration Request

6. Arkion Life Sciences LLC Request to extend FIFRA Section 24(c) Registration for the Use of Avipel Hopper Box (dry) Corn Seed Treatment to Discourage Consumption of Corn Seed by Grackles, Black Birds, and Crows

Arkion Life Sciences LLC is requesting an extension of the Special Local Need [24(c)] registration for the use of Avipel® Hopper Box (dry) Corn Seed Treatment (anthraquinone) to reduce predation of corn seed by grackles, black birds, and crows. This extension is supported by Richard Kersbergen, University of Maine Cooperative Extension Corn Specialist.

Presentation By: Mary Tomlinson,
Pesticides Registrar

Action Needed Approve/Disapprove the Section 18 Emergency Exemption Registration Request

7. Overview of Pesticide Laws that Currently Pertain the Use of Unmanned Aircraft for Pesticide Application

At the March 2017 meeting, the Board discussed current pesticide regulations and their pertinence to the use of unmanned aircraft to apply pesticides. Following the March discussion, the Board requested that

staff invite Federal Aviation Administration staff to provide explanation of the current aviation regulations pertaining to use of unmanned aircraft for the application of pesticides.

Presentation By: Daniel Jockett,
FAA Aviation Safety Inspector

Action Needed: None—Informational Only

8. Continuing Discussion of Rulemaking Priorities

At an earlier meeting, the Board discussed undertaking rulemaking to address Section 5 of Chapter 29 concerning browntail moth. Rulemaking is time-consuming and expensive so a list of all potential rulemaking was developed and, at the last meeting, the Board pared that list down to Chapters 27, 29 and 36. The Board will now discuss whether to proceed with rulemaking and consideration of amendments.

Presentation By: Megan Patterson,
Manager of Pesticide Programs

Action Needed: Determine Whether to Initiate Rulemaking and Schedule a Hearing

9. Discussion of the Definition of Wetlands as it Pertains to Chapter 29 Section 6

Ron Lemin, Crop Production Services, has requested that the Board clarify whether the definition of wetlands in Chapter 29 Section 6(c): "dominated by emergent or aquatic plants" was intended to include dry areas which contain plants such as phragmites, cattails, purple loosestrife, etc. The Board will now discuss the attached memo and provide clarification on the intended interpretation of the definition of wetlands.

Presentation By: Megan Patterson,
Manager of Pesticide Programs

Action Needed: Provide Definition Interpretation Clarification

10. Discussion of Provision of Worker Protection Standard Handler and Worker Training by Licensed Agricultural Basic Pesticide Applicators

In June of 2016, staff submitted an equivalency request to EPA regarding certification requirements for trainers of handlers and workers as defined by the Worker Protection Standard (WPS). The equivalency request argued that the licensing and certification requirements for Maine Private Applicators of General Use Pesticides (ag basic applicators) exceed the federal standards for certification of private applicators certified to use restricted use pesticides. Agreement with this argument would allow licensed and certified agricultural basic applicators to train their workers/handlers in compliance with the WPS. The Board will now discuss the attached staff memo and equivalency request and determine whether to consider agricultural basic applicators suitably trained to provide training to workers and handlers as defined by the WPS.

Presentation By: Megan Patterson,
Manager of Pesticide Programs

Action Needed: Determine Whether to Consider Ag Basic Applicators as Equivalent to Private Applicators for the Sole Purpose of Training WPS Defined Workers and Handlers

11. Consideration of Consent Agreement with Goodall Enterprises DBA NaturaLawn of America of Bangor, Maine

The Board's Enforcement Protocol authorizes staff to work with the Attorney General and negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. This procedure was designed for cases where there is no dispute of material facts or law, and the violator admits to the violation and acknowledges a willingness to pay a fine to resolve the matter. This case involves the unauthorized application of a pesticide by a commercial applicator.

Presentation By: Raymond Connors
Manager of Compliance

Action Needed: Approve/Disapprove the Consent Agreement Negotiated by Staff

12. Consideration of Consent Agreement with Salmon Falls Resort & Golf Club LLC

The Board's Enforcement Protocol authorizes staff to work with the Attorney General and negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. This procedure was designed for cases where there is no dispute of material facts or law, and the violator admits to the violation and acknowledges a willingness to pay a fine to resolve the matter. This case involves the commercial use of a pesticide by an unlicensed applicator.

Presentation By: Raymond Connors
Manager of Compliance

Action Needed: Approve/Disapprove the Consent Agreement Negotiated by Staff

13. Request for Clarification of Minimum State-level Labeling Requirements for Minimum Risk (Section 25(b) of FIFRA) Pesticides

In 1996, EPA exempted minimum risk pesticides from federal regulation under section 25(b) of FIFRA. The Pesticide Control Act of 1975 has not been revised to reflect the new reality of minimum risk pesticides. Staff request that the Board provide definitive guidance on requiring the minimum protective language of "caution" and the Child Hazard Statement for all pesticide products registered in Maine.

Presentation By: Cam Lay
Director

Action Needed: Approve/Disapprove Proposed Minimum Label Language

14. Election of Officers

The Board's statute requires an annual election of officers. The members will choose a chair and vice-chair to serve for the coming year.

Presentation By: Cam Lay
Director

Action Needed: Nominations and Election of Officers

15. Other Old or New Business

a. Board fund report
b. Homeowner outreach update
c. Revised biological policy pertaining to browntail moth control
d. Email and article submitted by Heather Spalding
e. Email and letter submitted by Lynn Hower Allen
f. Email and articles submitted by Heather Spalding
g. CMP 2017 Foliar Herbicide Plan
h. Asplundh variance
i. RWC variance
j. Woodland Club variance

16. Schedule of Future Meetings

June 23, 2017 and August 4, 2017 are tentative Board meeting dates. The Board will decide whether to change and/or add dates.

- The August 4, 2017 meeting will be held in Fairfield

Adjustments and/or Additional Dates?

17. Adjourn

NOTES

- The Board Meeting Agenda and most supporting documents are posted one week before the meeting on the Board website at www.thinkfirstspraylast.org.
- Any person wishing to receive notices and agendas for meetings of the Board, Medical Advisory Committee, or Environmental Risk Advisory Committee must submit a request in writing to the Board's office. Any person with technical expertise who would like to volunteer for service on either committee is invited to submit their resume for future consideration.
- On November 16, 2007, the Board adopted the following policy for submission and distribution of comments and information when conducting routine business (product registration, variances, enforcement actions, etc.):

- *For regular, non-rulemaking business*, the Board will accept pesticide-related letters, reports, and articles. Reports and articles must be from peer-reviewed journals. E-mail, hard copy, or fax should be sent to the Board's office or pesticides@maine.gov. In order for the Board to receive this information in time for distribution and consideration at its next meeting, all communications must be received by 8:00 AM, three days prior to the Board meeting date (e.g., if the meeting is on a Friday, the deadline would be Tuesday at 8:00 AM). Any information received after the deadline will be held over for the next meeting.

- During rulemaking, when proposing new or amending old regulations, the Board is subject to the requirements of the APA (Administrative Procedures Act), and comments must be taken according to the rules established by the Legislature.

STATE OF MAINE
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PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

TO: Board Members
FROM: Lebelle Hicks PhD DABT
RE: Review of VNT1 Protein in Potatoes
DATE: April 19, 2016

We have a request to register three new plant-incorporated protectants for late blight control in potatoes. These products are registered by J.R. Simplot Co and the varieties and EPA registration numbers are: Russet Burbank (W8), 8917-1 (J.R. Simplot 2016a), Ranger Russet (X17), 8917-2 (J.R. Simplot 2016b) and Atlantic (Y9) 8917-3 (J.R. Simplot 2016c) (attached). The gene, *Rpi-Vnt1* was taken from the wild tomato, *Solanum venturii* and the protein VNT1 inhibits the hyper sensitivity response in the fungi causing cell death (EPA 2016m).

In November 2016, J.R. Simplot submitted product characterization (description of the transformation process and the genetics of the product), and bioinformatics (protein similarities to allergens and plant toxins) to support waivers for toxicity testing.

In all three potato varieties, the gene expression was higher in the foliage (comparable to expression in the parent wild tomato) than in the tuber. The protein VNT1 was below the limit of quantitation in all plant materials for all cultivars. Due to the variation in the background level of expression, the conservative estimate of VNT1 in all tissues was set at < 100 ppb (ug/kg tissue) (EPA 2016m).

EPA granted the waivers for the entire battery of mammalian toxicity tests based on submitted data demonstrating that the gene and the VNT1 protein are very similar to 70 to 90% of genes found in widely consumed varieties of tomatoes that have no impacts on human health. In addition, no significant similarity between the VNT1 protein and known allergens or toxins was identified. It is highly unlikely that introduction of this gene into potatoes would represent a safety risk (EPA 2016m, EPA 2016n).

References Cited

EPA 2016m, Review of Product Characterization, Toxicity Waiver Requests, Allergenicity and Human Health Data for the Plant incorporated Protectant (PIP) X17 Ranger Russet, W8 Russet Burbank, and Y9 Atlantic Potato [EPA Reg No 8917-R, 8917-E, 8917-G] in support for a Sec 3 Registration and an exemption from tolerance [Petition 5F8425]

EPA 2016n, Federal Food Drug and Cosmetic Act (FFDCA) Considerations for VNT1 Protein in Potato

J.R. Simplot 2016a, W8 Late Blight Protection, EPA# 8917-1 containing < 1.0 x 5E-5% VNT1 protein from Plasmid pSIM1678 Federal label

J.R. Simplot 2016b, X17 Late Blight Protection, EPA# 8917-2 containing < 1.0 x 5E-5% VNT1 protein from Plasmid pSIM1678 Federal label

J.R. Simplot 2016c, Y9 Late Blight Protection, EPA# 8917-3 containing < 1.0 x 5E-5% VNT1 protein from Plasmid pSIM1678 Federal label

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Plant-Incorporated Protectant

W8 late blight protection

OECD Unique Identifier: SPS-ØØØW8-4

Active Ingredient:

The VNT1 protein product of the *Rpi-vnt1* gene from plasmid pSIM1678……<1.0x10^{-5} %*

*Percent VNT1 protein expressed in fresh potato tubers.

KEEP OUT OF REACH OF CHILDREN

CAUTION

ACCEPTED
01/19/2017
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 8917-1

EPA Registration Number: 8917-1

EPA Establishment Number: 8917-ID-35

J.R. Simplot Company
5369 W. Irving St.
Boise, ID 83706

DIRECTIONS FOR USE

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

Potatoes with W8 late blight protection have been transformed to express the *Rpi-vnt1* gene product, the VNT1 protein, for protection against foliar late blight caused by *Phytophthora infestans*. Controlled *P. infestans* strains include US-8, US-22, US-23, and US-24.

Under this registration, W8 late blight protection may be used for conventional breeding with non-PIP potatoes not regulated by EPA to develop new potato varieties containing VNT1 and the genetic material necessary for its production (pSIM1678 T-DNA).

This plant-incorporated protectant may be combined through conventional breeding with registered PIPs that are similarly approved for use in combination with registered PIPs to produce new potato varieties with combined pesticidal traits.

INTEGRATED PEST MANAGEMENT

Best management practices are recommended when using W8 late blight protection. Examples of appropriate BMPs include:

- using certified seed;
- crop rotation, including avoidance of planting to fields with infected potato volunteers;
- sanitizing seed-cutting equipment;
- monitoring late blight alerts;
- scouting for late blight lesions;
- killing vines prior to harvest if the crop will be stored; and
- destroying cull piles.

In order to prolong trait durability, late blight fungicide use may be recommended. Read the Late Blight Integrated Pest Management Guide for Innate® Generation 2 Varieties and follow the recommended number of fungicide applications.

W8 late blight protection is a patent-protected* product of the J.R. Simplot Company, Simplot Plant Sciences with unique genetic elements (*United States Patent No. 8,889,964).

Safety Data Sheet

According to OSHA HCS (29 CFR § 1910.1200(g)) as Published in the Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012

1 IDENTIFICATION

Product Identifier:

Product Name: W8 late blight protection
EPA Reg. No.: 8917-1
Synonyms: W8

Distributor Information:

J. R. Simplot Company
5369 West Irving Street
Boise, ID 83706

Toll Free: 800.635.9444
Fax: 208.780.6027
Email: stewardship@simplot.com
Website: www.simplot.com

Emergency Phone Number: 208.780.6000
Recommended Use: This product is late blight-protected potato seed for use in potato production.
Use Restrictions: Use only according to label directions and precautionary statements.

2 HAZARDS IDENTIFICATION

Hazard Classification: This potato seed is not considered hazardous by the 2012 OSHA Communication Standard (29 CFR 1910.1200).
GHS Label Elements: N/A
Signal Word: This potato seed contains no substances which are, at their given concentration, considered to be hazardous to health.
Hazards Statements: None
Precautionary Statements:

Prevention: None
Response: None
Storage: Store according to typical practices for seed potato. No special pesticide handling precautions.
Disposal: Unwanted material may be disposed of by systemic herbicide treatment, disking, tillage, or hand picking, deep pit burial, autoclave (121 °C for 30 min), freezing, freeze-drying, grinding, composting, desiccating, crushing, or burning. Potato tuber storage bags, boxes, and containers may be cleaned, frozen, or autoclaved.

Hazards Not Otherwise Classified: N/A
Unknown Toxicity: None
Other Information: None
Interactions with Other Chemicals: Not classified.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Active Ingredients: The VNT1 Protein and *Rpi-vnt1* gene necessary for production in potatoes. Potato seed contains $<1.0x10^{-5}$% VNT1 protein (as expressed in potato tubers).

4 FIRST-AID MEASURES

General Advice: No special first aid measures are necessary.
Eye Contact: If dust associated with the seed gets in the eye, remove with water.
Skin Contact: No known or anticipated hazards associated with handling of this product.
Inhalation: If any dust associated with the seed is inhaled, remove to fresh air.
Ingestion: This product is not toxic if swallowed.
Most Important Symptoms and Effects: N/A
Note to Physician: For additional information, call collect anytime day or night 208.780.6000.

5 FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Use measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media: N/A

Specific Hazards Arising from this Mixture: Not classified.
Hazardous Combustion Product(s): N/A
Sensitivity to Mechanical Impact: No
Sensitivity to Static Discharge: No
Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSHA (approved or equivalent) and full protective gear.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: No special protective precautions are required when cleaning up spills.
Environmental Precautions: N/A
Containment Methods: Prevent further spillage if safe to do so.
Cleanup Methods: Pick up and transfer to properly labeled containers.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Handle as any potato seed product.
Storage Recommendations: Keep containers closed in a cool, dry and well-ventilated place.
Incompatible Products: None known.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters - Exposure Guidelines: This product, as supplied, does not contain any hazardous material with occupational exposure limits established by the region specific regulatory bodies.
Appropriate Engineering Controls - Engineering Measures: None
Individual Protection Measures -Personal Protective Equipment:

Eye/Face: No specific protective equipment is needed.
Skin/Body: No specific protective equipment is needed.
Respiratory: Avoid breathing dusts. Use NIOSH approved respiratory protection equipment when airborne exposure is excessive (see below). Consult the respirator manufacturer to determine the appropriate type of equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

VENTILATION: No special requirement when used as recommended.
AIRBORNE EXPOSURE LIMITS:
COMPONENT: Late-blight protected potatoes
OSHA PEL: None established*
ACGIH TLV: None established
*OSHA has not established specific exposure limits for this material. However, OSHA has established limits for particulates not otherwise regulated (PNOR) respectively, which are the least stringent exposure limits applicable to dusts.
OSHA PEL: 15 mg/m3 (total dust) 8-hr TWA
5 mg/m3 (respirable) 8-hr TWA
Hygiene Measures: Handle in accordance with good industrial hygiene practices.

9 PHYSICAL AND CHEMICAL PROPERTIES

Auto-ignition temperature:	N/A	Partition coefficient: n-octanol/water:	N/A
Color:	typical of potato seed	pH:	N/A
Decomposition temperature:	N/D	Physical state:	Solid
Evaporation rate:	N/A	Relative density:	N/D
Flammability (solid, gas):	N/A	Solubility(ies):	No
Flash point:	N/A	Upper/lower explosive limits:	N/A
Freezing point:	N/D	Upper/lower flammability limits:	N/A
Initial boiling point and range:	N/A	Vapor pressure:	N/A
Melting point:	N/A	Viscosity:	N/A
Odor:	typical of potato seed	N/A = Not Applicable	N/D = Not Determined

10 STABILITY AND REACTIVITY

Reactivity: Not classified.
Chemical Stability: Considered comparable to proteins.
Possibility of Hazardous Reactions: None
Hazardous Polymerization: Does not occur.
Conditions to Avoid: None known.
Incompatible Materials: None known.
Hazardous Decomposition Products: N/A

11 TOXICOLOGICAL INFORMATION

No toxicological data are available.

Product Information:
- **Inhalation:** N/A
- **Eye Contact:** N/A
- **Skin Contact:** N/A
- **Ingestion:** N/A

Information on Toxicological Effects: Not classified.
Delayed and immediate effects as well as chronic effects from short and long-term exposure:
- **Sensitization:** Not classified.
- **Mutagenic Effects:** Not classified.
- **Carcinogenicity:** Contains no ingredient listed as a carcinogen.
- **Reproductive Toxicity:** Not classified.
- **STOT-single exposure:** Not classified.
- **STOT-repeated exposure:** Not classified.
- **Chronic Toxicity:** No known effect based on information supplied.
- **Target Organ Effects:** None known.
- **Aspiration Hazard:** Not classified.

Numerical Measures of Toxicity – Product Information:
The following value is calculated based on Chapter 3.1 of the GHS document: N/A

12 ECOLOGICAL INFORMATION (NON-MANDATORY)

Adverse effects to non-target organisms, including birds, wild mammals, freshwater and marine/estuarine fish, invertebrates, insects, honey bees, soil invertebrates, and terrestrial and aquatic plants, are not anticipated. Horizontal gene transfer, gene flow, and the development of weediness are also not anticipated.

For additional information on this product or the protein, contact Simplot at stewardship@simplot.com or 800.635.9444.

Persistence and Degradability: Not classified.
Bioaccumulation: Not classified.
Other Adverse Effects: Not classified.

13 DISPOSAL CONSIDERATIONS (NON-MANDATORY)

Disposal Methods: This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional or local regulations for additional requirements.

If treated with a seed treatment, dispose of any remaining product per container disposal instructions.

Contaminated Packaging: Dispose of contents/containers in accordance with local regulations.

14 TRANSPORT INFORMATION (NON-MANDATORY)

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

15 REGULATORY INFORMATION (NON-MANDATORY)

International Inventories:

TSCA: N/A	DSL: All components are listed either on the DSL or NDSL
TSCA: United States Toxic Substances Control Act Section 8(b) Inventory; DSL/NDSL: Canadian Domestic Substances List/Non-Domestic Substances List	

U.S. Federal Regulations:
SARA 313: Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (“SARA”). This product does not contain any chemicals that are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 313.312 Hazard Categories:

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act): This product does not contain any substances regulated as pollutants pursuant to the CWA (40 CFR 122.21 and 122.42).

CERCLA (Comprehensive Environmental Response Compensation and Liability Act): This material does not contain any substances regulated as hazardous under CERCLA (40 CFR 302).

SARA (Superfund Amendments and Reauthorization Act): This material does not contain any substances regulated as hazardous under SARA (40 CFR 355). There may be specific requirements at the local, regional or state level pertaining to releases of this material.

U.S. State Regulations:
California Proposition 65: This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations: N/A

International Regulations:
Mexico National Occupational Exposure Limits: N/A

Canada WHMIS Class: Not Determined

FIFRA Statement
This potato seed is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under Federal pesticide law. These requirements differ from the classification criteria and hazard information required for Safety Data Sheets ("SDS") and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including Directions for Use.

16 OTHER INFORMATION

NFPA:	Health Hazards:	0	Flammability:	0	Instability:	0	Physical and Chemical Hazards-Personal Protection:	No
HMIS:	Health Hazards:	0	Flammability:	0	Instability:	0	Physical and Chemical Hazards-Personal Protection:	No

SDS Information:
Date Prepared: 01/17/2017
Version: 1

DISCLAIMER

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, process, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific designated material and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Plant-Incorporated Protectant

X17 late blight protection

OECD Unique Identifier: SPS-ØØX17-5

Active Ingredient:

The VNT1 protein product of the *Rpi-vnt1* gene from plasmid pSIM1678……<1.0x10^{-5} %*

*Percent VNT1 protein expressed in fresh potato tubers.

KEEP OUT OF REACH OF CHILDREN

CAUTION

ACCEPTED
01/19/2017
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 8917-2

EPA Registration Number: 8917-2

EPA Establishment Number: 8917-ID-35

J.R. Simplot Company
5369 W. Irving St.
Boise, ID 83706

DIRECTIONS FOR USE

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

Potatoes with X17 late blight protection have been transformed to express the *Rpi-vnt1* gene product, the VNT1 protein, for protection against foliar late blight caused by *Phytophthora infestans*. Controlled *P. infestans* strains include US-8, US-22, US-23, and US-24.

Under this registration, X17 late blight protection may be used for conventional breeding with non-PIP potatoes not regulated by EPA to develop new potato varieties containing VNT1 and the genetic material necessary for its production (pSIM1678 T-DNA).

This plant-incorporated protectant may be combined through conventional breeding with registered PIPs that are similarly approved for use in combination with registered PIPs to produce new potato varieties with combined pesticidal traits.

INTEGRATED PEST MANAGEMENT

Best management practices are recommended when using X17 late blight protection. Examples of appropriate BMPs include:

- using certified seed;
- crop rotation, including avoidance of planting to fields with infected potato volunteers;
- sanitizing seed-cutting equipment;
- monitoring late blight alerts;
- scouting for late blight lesions;
- killing vines prior to harvest if the crop will be stored; and
- destroying cull piles.

In order to prolong trait durability, late blight fungicide use may be recommended. Read the Late Blight Integrated Pest Management Guide for Innate® Generation 2 Varieties and follow the recommended number of fungicide applications.

X17 late blight protection is a patent-protected* product of the J.R. Simplot Company, Simplot Plant Sciences with unique genetic elements (*United States Patent No. 8,889,964).

Safety Data Sheet

According to OSHA HCS (29 CFR § 1910.1200(g)) as Published in the Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012

1 IDENTIFICATION

Product Identifier:

Product Name: X17 late blight protection
EPA Reg. No.: 8917-2
Synonyms: X17

Distributor Information:

J. R. Simplot Company
5369 West Irving Street
Boise, ID 83706

Toll Free: 800.635.9444
Fax: 208.780.6027
Email: stewardship@simplot.com
Website: www.simplot.com

Emergency Phone Number: 208.780.6000
Recommended Use: This product is late blight-protected potato seed for use in potato production.
Use Restrictions: Use only according to label directions and precautionary statements.

2 HAZARDS IDENTIFICATION

Hazard Classification: This potato seed is not considered hazardous by the 2012 OSHA Communication Standard (29 CFR 1910.1200).
GHS Label Elements: N/A
Signal Word: This potato seed contains no substances which are, at their given concentration, considered to be hazardous to health.
Hazards Statements: None
Precautionary Statements:
Prevention: None
Response: None
Storage: Store according to typical practices for seed potato. No special pesticide handling precautions.
Disposal: Unwanted material may be disposed of by systemic herbicide treatment, disking, tillage, or hand picking, deep pit burial, autoclave (121 °C for 30 min), freezing, freeze-drying, grinding, composting, desiccating, crushing, or burning. Potato tuber storage bags, boxes, and containers may be cleaned, frozen, or autoclaved.
Hazards Not Otherwise Classified: N/A
Unknown Toxicity: None
Other Information: None
Interactions with Other Chemicals: Not classified.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Active Ingredients: The VNT1 Protein and *Rpi-vnt1* gene necessary for production in potatoes. Potato seed contains $<1.0x10^{-5}$% VNT1 protein (as expressed in potato tubers).

4 FIRST-AID MEASURES

General Advice: No special first aid measures are necessary.
Eye Contact: If dust associated with the seed gets in the eye, remove with water.
Skin Contact: No known or anticipated hazards associated with handling of this product.
Inhalation: If any dust associated with the seed is inhaled, remove to fresh air.
Ingestion: This product is not toxic if swallowed.
Most Important Symptoms and Effects: N/A
Note to Physician: For additional information, call collect anytime day or night 208.780.6000.

5 FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Use measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media: N/A

Specific Hazards Arising from this Mixture: Not classified.
Hazardous Combustion Product(s): N/A
Sensitivity to Mechanical Impact: No
Sensitivity to Static Discharge: No
Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSHA (approved or equivalent) and full protective gear.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: No special protective precautions are required when cleaning up spills.
Environmental Precautions: N/A
Containment Methods: Prevent further spillage if safe to do so.
Cleanup Methods: Pick up and transfer to properly labeled containers.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Handle as any potato seed product.
Storage Recommendations: Keep containers closed in a cool, dry and well-ventilated place.
Incompatible Products: None known.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters - Exposure Guidelines: This product, as supplied, does not contain any hazardous material with occupational exposure limits established by the region specific regulatory bodies.
Appropriate Engineering Controls - Engineering Measures: None
Individual Protection Measures -Personal Protective Equipment:

Eye/Face: No specific protective equipment is needed.
Skin/Body: No specific protective equipment is needed.
Respiratory: Avoid breathing dusts. Use NIOSH approved respiratory protection equipment when airborne exposure is excessive (see below). Consult the respirator manufacturer to determine the appropriate type of equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

VENTILATION: No special requirement when used as recommended.
AIRBORNE EXPOSURE LIMITS:
COMPONENT: Late-blight protected potatoes
OSHA PEL: None established*
ACGIH TLV: None established
*OSHA has not established specific exposure limits for this material. However, OSHA has established limits for particulates not otherwise regulated (PNOR) respectively, which are the least stringent exposure limits applicable to dusts.
OSHA PEL: 15 mg/m3 (total dust) 8-hr TWA
5 mg/m3 (respirable) 8-hr TWA
Hygiene Measures: Handle in accordance with good industrial hygiene practices.

9 PHYSICAL AND CHEMICAL PROPERTIES

Auto-ignition temperature:	N/A	Partition coefficient: n-octanol/water:	N/A
Color:	typical of potato seed	pH:	N/A
Decomposition temperature:	N/D	Physical state:	Solid
Evaporation rate:	N/A	Relative density:	N/D
Flammability (solid, gas):	N/A	Solubility(ies):	No
Flash point:	N/A	Upper/lower explosive limits:	N/A
Freezing point:	N/D	Upper/lower flammability limits:	N/A
Initial boiling point and range:	N/A	Vapor pressure:	N/A
Melting point:	N/A	Viscosity:	N/A
Odor:	typical of potato seed	N/A = Not Applicable	N/D = Not Determined

10 STABILITY AND REACTIVITY

Reactivity: Not classified.
Chemical Stability: Considered comparable to proteins.
Possibility of Hazardous Reactions: None
Hazardous Polymerization: Does not occur.
Conditions to Avoid: None known.
Incompatible Materials: None known.
Hazardous Decomposition Products: N/A

11 TOXICOLOGICAL INFORMATION

No toxicological data are available.

Product Information:
- **Inhalation:** N/A
- **Eye Contact:** N/A
- **Skin Contact:** N/A
- **Ingestion:** N/A

Information on Toxicological Effects: Not classified.
Delayed and immediate effects as well as chronic effects from short and long-term exposure:
- **Sensitization:** Not classified.
- **Mutagenic Effects:** Not classified.
- **Carcinogenicity:** Contains no ingredient listed as a carcinogen.
- **Reproductive Toxicity:** Not classified.
- **STOT-single exposure:** Not classified.
- **STOT-repeated exposure:** Not classified.
- **Chronic Toxicity:** No known effect based on information supplied.
- **Target Organ Effects:** None known.
- **Aspiration Hazard:** Not classified.

Numerical Measures of Toxicity – Product Information:
The following value is calculated based on Chapter 3.1 of the GHS document: N/A

12 ECOLOGICAL INFORMATION (NON-MANDATORY)

Adverse effects to non-target organisms, including birds, wild mammals, freshwater and marine/estuarine fish, invertebrates, insects, honey bees, soil invertebrates, and terrestrial and aquatic plants, are not anticipated. Horizontal gene transfer, gene flow, and the development of weediness are also not anticipated.

For additional information on this product or the protein, contact Simplot at stewardship@simplot.com or 800.635.9444.

Persistence and Degradability: Not classified.
Bioaccumulation: Not classified.
Other Adverse Effects: Not classified.

13 DISPOSAL CONSIDERATIONS (NON-MANDATORY)

Disposal Methods: This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional or local regulations for additional requirements.

If treated with a seed treatment, dispose of any remaining product per container disposal instructions.

Contaminated Packaging: Dispose of contents/containers in accordance with local regulations.

14 TRANSPORT INFORMATION (NON-MANDATORY)

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

15 REGULATORY INFORMATION (NON-MANDATORY)

International Inventories:

TSCA: N/A	DSL: All components are listed either on the DSL or NDSL
TSCA: United States Toxic Substances Control Act Section 8(b) Inventory; DSL/NDSL: Canadian Domestic Substances List/Non-Domestic Substances List	

U.S. Federal Regulations:
SARA 313: Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (“SARA”). This product does not contain any chemicals that are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 313.312 Hazard Categories:

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act): This product does not contain any substances regulated as pollutants pursuant to the CWA (40 CFR 122.21 and 122.42).

CERCLA (Comprehensive Environmental Response Compensation and Liability Act): This material does not contain any substances regulated as hazardous under CERCLA (40 CFR 302).

SARA (Superfund Amendments and Reauthorization Act): This material does not contain any substances regulated as hazardous under SARA (40 CFR 355). There may be specific requirements at the local, regional or state level pertaining to releases of this material.

U.S. State Regulations:
California Proposition 65: This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations: N/A

International Regulations:
Mexico National Occupational Exposure Limits: N/A

Canada WHMIS Class: Not Determined

FIFRA Statement
This potato seed is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under Federal pesticide law. These requirements differ from the classification criteria and hazard information required for Safety Data Sheets ("SDS") and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including Directions for Use.

16 OTHER INFORMATION

NFPA:	Health Hazards:	0	Flammability:	0	Instability:	0	Physical and Chemical Hazards-Personal Protection:	No
HMIS:	Health Hazards:	0	Flammability:	0	Instability:	0	Physical and Chemical Hazards-Personal Protection:	No

SDS Information:
Date Prepared: 01/17/2017
Version: 1

DISCLAIMER

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, process, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific designated material and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Plant-Incorporated Protectant

Y9 late blight protection

OECD Unique Identifier: SPS-ØØØY9-7

Active Ingredient:

The VNT1 protein product of the *Rpi-vnt1* gene from plasmid pSIM1678……<1.0x10^{-5} %*

*Percent VNT1 protein expressed in fresh potato tubers.

KEEP OUT OF REACH OF CHILDREN

CAUTION

ACCEPTED
01/19/2017
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 8917-3

EPA Registration Number: 8917-3

EPA Establishment Number: 8917-ID-35

J.R. Simplot Company
5369 W. Irving St.
Boise, ID 83706

DIRECTIONS FOR USE

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

Potatoes with Y9 late blight protection have been transformed to express the *Rpi-vnt1* gene product, the VNT1 protein, for protection against foliar late blight caused by *Phytophthora infestans*. Controlled *P. infestans* strains include US-8, US-22, US-23, and US-24.

Under this registration, Y9 late blight protection may be used for conventional breeding with non-PIP potatoes not regulated by EPA to develop new potato varieties containing VNT1 and the genetic material necessary for its production (pSIM1678 T-DNA).

This plant-incorporated protectant may be combined through conventional breeding with registered PIPs that are similarly approved for use in combination with registered PIPs to produce new potato varieties with combined pesticidal traits.

INTEGRATED PEST MANAGEMENT

Best management practices are recommended when using Y9 late blight protection. Examples of appropriate BMPs include:

- using certified seed;
- crop rotation, including avoidance of planting to fields with infected potato volunteers;
- sanitizing seed-cutting equipment;
- monitoring late blight alerts;
- scouting for late blight lesions;
- killing vines prior to harvest if the crop will be stored; and
- destroying cull piles.

In order to prolong trait durability, late blight fungicide use may be recommended. Read the Late Blight Integrated Pest Management Guide for Innate® Generation 2 Varieties and follow the recommended number of fungicide applications.

Y9 late blight protection is a patent-protected* product of the J.R. Simplot Company, Simplot Plant Sciences with unique genetic elements (*United States Patent No. 8,889,964).

Safety Data Sheet

According to OSHA HCS (29 CFR § 1910.1200(g)) as Published in the Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012

1 IDENTIFICATION

Product Identifier:

Product Name: Y9 late blight protection
EPA Reg. No.: 8917-3
Synonyms: Y9

Distributor Information:

J. R. Simplot Company
5369 West Irving Street
Boise, ID 83706

Toll Free: 800.635.9444
Fax: 208.780.6027
Email: stewardship@simplot.com
Website: www.simplot.com

Emergency Phone Number: 208.780.6000
Recommended Use: This product is late blight-protected potato seed for use in potato production.
Use Restrictions: Use only according to label directions and precautionary statements.

2 HAZARDS IDENTIFICATION

Hazard Classification: This potato seed is not considered hazardous by the 2012 OSHA Communication Standard (29 CFR 1910.1200).
GHS Label Elements: N/A
Signal Word: This potato seed contains no substances which are, at their given concentration, considered to be hazardous to health.
Hazards Statements: None
Precautionary Statements:
Prevention: None
Response: None
Storage: Store according to typical practices for seed potato. No special pesticide handling precautions.
Disposal: Unwanted material may be disposed of by systemic herbicide treatment, disking, tillage, or hand picking, deep pit burial, autoclave (121 °C for 30 min), freezing, freeze-drying, grinding, composting, desiccating, crushing, or burning. Potato tuber storage bags, boxes, and containers may be cleaned, frozen, or autoclaved.
Hazards Not Otherwise Classified: N/A
Unknown Toxicity: None
Other Information: None
Interactions with Other Chemicals: Not classified.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Active Ingredients: The VNT1 Protein and *Rpi-vnt1* gene necessary for production in potatoes. Potato seed contains $<1.0x10^{-5}$% VNT1 protein (as expressed in potato tubers).

4 FIRST-AID MEASURES

General Advice: No special first aid measures are necessary.
Eye Contact: If dust associated with the seed gets in the eye, remove with water.
Skin Contact: No known or anticipated hazards associated with handling of this product.
Inhalation: If any dust associated with the seed is inhaled, remove to fresh air.
Ingestion: This product is not toxic if swallowed.
Most Important Symptoms and Effects: N/A
Note to Physician: For additional information, call collect anytime day or night 208.780.6000.

5 FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Use measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media: N/A

Specific Hazards Arising from this Mixture: Not classified.
Hazardous Combustion Product(s): N/A
Sensitivity to Mechanical Impact: No
Sensitivity to Static Discharge: No
Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSHA (approved or equivalent) and full protective gear.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: No special protective precautions are required when cleaning up spills.
Environmental Precautions: N/A
Containment Methods: Prevent further spillage if safe to do so.
Cleanup Methods: Pick up and transfer to properly labeled containers.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Handle as any potato seed product.
Storage Recommendations: Keep containers closed in a cool, dry and well-ventilated place.
Incompatible Products: None known.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters - Exposure Guidelines: This product, as supplied, does not contain any hazardous material with occupational exposure limits established by the region specific regulatory bodies.
Appropriate Engineering Controls - Engineering Measures: None
Individual Protection Measures -Personal Protective Equipment:

Eye/Face: No specific protective equipment is needed.
Skin/Body: No specific protective equipment is needed.
Respiratory: Avoid breathing dusts. Use NIOSH approved respiratory protection equipment when airborne exposure is excessive (see below). Consult the respirator manufacturer to determine the appropriate type of equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

VENTILATION: No special requirement when used as recommended.
AIRBORNE EXPOSURE LIMITS:
COMPONENT: Late-blight protected potatoes
OSHA PEL: None established*
ACGIH TLV: None established
*OSHA has not established specific exposure limits for this material. However, OSHA has established limits for particulates not otherwise regulated (PNOR) respectively, which are the least stringent exposure limits applicable to dusts.
OSHA PEL: 15 mg/m3 (total dust) 8-hr TWA
5 mg/m3 (respirable) 8-hr TWA
Hygiene Measures: Handle in accordance with good industrial hygiene practices.

9 PHYSICAL AND CHEMICAL PROPERTIES

Auto-ignition temperature:	N/A	Partition coefficient: n-octanol/water:	N/A
Color:	typical of potato seed	pH:	N/A
Decomposition temperature:	N/D	Physical state:	Solid
Evaporation rate:	N/A	Relative density:	N/D
Flammability (solid, gas):	N/A	Solubility(ies):	No
Flash point:	N/A	Upper/lower explosive limits:	N/A
Freezing point:	N/D	Upper/lower flammability limits:	N/A
Initial boiling point and range:	N/A	Vapor pressure:	N/A
Melting point:	N/A	Viscosity:	N/A
Odor:	typical of potato seed	N/A = Not Applicable	N/D = Not Determined

10 STABILITY AND REACTIVITY

Reactivity: Not classified.
Chemical Stability: Considered comparable to proteins.
Possibility of Hazardous Reactions: None
Hazardous Polymerization: Does not occur.
Conditions to Avoid: None known.
Incompatible Materials: None known.
Hazardous Decomposition Products: N/A

11 TOXICOLOGICAL INFORMATION

No toxicological data are available.

Product Information:
- **Inhalation:** N/A
- **Eye Contact:** N/A
- **Skin Contact:** N/A
- **Ingestion:** N/A

Information on Toxicological Effects: Not classified.
Delayed and immediate effects as well as chronic effects from short and long-term exposure:
- **Sensitization:** Not classified.
- **Mutagenic Effects:** Not classified.
- **Carcinogenicity:** Contains no ingredient listed as a carcinogen.
- **Reproductive Toxicity:** Not classified.
- **STOT-single exposure:** Not classified.
- **STOT-repeated exposure:** Not classified.
- **Chronic Toxicity:** No known effect based on information supplied.
- **Target Organ Effects:** None known.
- **Aspiration Hazard:** Not classified.

Numerical Measures of Toxicity – Product Information:
The following value is calculated based on Chapter 3.1 of the GHS document: N/A

12 ECOLOGICAL INFORMATION (NON-MANDATORY)

Adverse effects to non-target organisms, including birds, wild mammals, freshwater and marine/estuarine fish, invertebrates, insects, honey bees, soil invertebrates, and terrestrial and aquatic plants, are not anticipated. Horizontal gene transfer, gene flow, and the development of weediness are also not anticipated.

For additional information on this product or the protein, contact Simplot at stewardship@simplot.com or 800.635.9444.

Persistence and Degradability: Not classified.
Bioaccumulation: Not classified.
Other Adverse Effects: Not classified.

13 DISPOSAL CONSIDERATIONS (NON-MANDATORY)

Disposal Methods: This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional or local regulations for additional requirements.

If treated with a seed treatment, dispose of any remaining product per container disposal instructions.

Contaminated Packaging: Dispose of contents/containers in accordance with local regulations.

14 TRANSPORT INFORMATION (NON-MANDATORY)

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

15 REGULATORY INFORMATION (NON-MANDATORY)

International Inventories:

TSCA: N/A	DSL: All components are listed either on the DSL or NDSL
TSCA: United States Toxic Substances Control Act Section 8(b) Inventory; DSL/NDSL: Canadian Domestic Substances List/Non-Domestic Substances List	

U.S. Federal Regulations:
SARA 313: Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (“SARA”). This product does not contain any chemicals that are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 313.312 Hazard Categories:

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act): This product does not contain any substances regulated as pollutants pursuant to the CWA (40 CFR 122.21 and 122.42).

CERCLA (Comprehensive Environmental Response Compensation and Liability Act): This material does not contain any substances regulated as hazardous under CERCLA (40 CFR 302).

SARA (Superfund Amendments and Reauthorization Act): This material does not contain any substances regulated as hazardous under SARA (40 CFR 355). There may be specific requirements at the local, regional or state level pertaining to releases of this material.

U.S. State Regulations:
California Proposition 65: This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations: N/A

International Regulations:
Mexico National Occupational Exposure Limits: N/A

Canada WHMIS Class: Not Determined

FIFRA Statement
This potato seed is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under Federal pesticide law. These requirements differ from the classification criteria and hazard information required for Safety Data Sheets ("SDS") and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including Directions for Use.

16 OTHER INFORMATION

NFPA:	Health Hazards:	0	Flammability:	0	Instability:	0	Physical and Chemical Hazards-Personal Protection:	No
HMIS:	Health Hazards:	0	Flammability:	0	Instability:	0	Physical and Chemical Hazards-Personal Protection:	No

SDS Information:
Date Prepared: 01/17/2017
Version: 1

DISCLAIMER

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, process, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific designated material and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar
Re: EPA Special Local Need (SLN) [FIFRA, Section 24(c)] application to approve the use of Callisto Herbicide (EPA Reg. No. 100-1131) for control of broadleaf weeds in lowbush blueberries in the bearing and non-bearing years
Date: May 3, 2017

****

Enclosed is the SLN application and supporting documents for the use of Callisto Herbicide (EPA Reg. No. 100-1131) to control broadleaf weeds, in lowbush blueberry fields, in the bearing and non-bearing years. This request combines the previous Section 24(c) use for the bearing year with application during the non-bearing year. This product is currently registered in the U.S., but only for use on lowbush blueberries in the non-bearing year. The total application rate on the container label and the SLN are the same for the non-bearing year, but the timing is different. According to Dr. Yarborough, the changes in the application timing indicates improved effectiveness in the control of seeds such as dogbane.

Your package includes the additional documents listed below for your review:

- Section 24(c) application
- Proposed SLN supplemental label for this use
- Cover letter from Patricia Dinnen, Senior Regulatory Manager, Syngenta Crop Protection, Inc.
- Support letter from David E. Yarborough, Ph.D., University of Maine Cooperative Extension
- Efficacy data from Syngenta
- State product Section 3 label
- SDS for Callisto Herbicide

Please review these materials and let me know if you have any questions.

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

Form Approved, OMB No. 2070–0055

United States Environmental Protection Agency
Office of Pesticide Programs. Registration Division (7505C)
Washington, DC 20460

Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need

(Pursuant to section 24(c) of the Federal Insecticide, Fungicide, and Rodenticide Act as Amended

For State Use Only
Registration No. Assigned
Date Registration Issued

1. Name and Address of Applicant for Registration
Syngenta Crop Protection, LLC
PO Box 18300
Greensboro, NC 27419

2. Product is (Check one)
EPA-Registered ☒ — EPA Registration Number 100-1131
New (not EPA-registered) ☐ Attach EPA Form 8570–4, Confidential Statement of Formula for new products. — EPA Company Number 100

3. Active Ingredient(s) in Product
Mesotrione

4. Product Name
Callisto® Herbicide

5. If this is a food/feed use, a tolerance or other residue clearance is required. Cite appropriate regulations in 40 CFR Part 180. 186, and/or 186.
40 CFR 180.571

6. Type of Registration (Give details in Item 13 or on a separate page, properly identified and attached to this form):
- ☐ a. To permit use of a new product.
- ☒ b. To amend EPA registration for one or more of the following purposes:
  - ☐ (1) To permit use on additional crops or animals.
  - ☐ (2) To permit use at additional rates.
  - ☐ (3) To permit use against additional pests.
  - ☐ (4) To permit use of additional application techniques or equipment.
  - ☐ (5) To permit use at different application sites.
  - ☒ (6) Other (specify below) See paragraph 13

7. Nature of Special Local Need (check one)
- ☐ There is no pesticide product registered by EPA for such use.
- ☒ There is no EPA–registered pesticide product which, under the conditions of use within the State, would be as safe and/or as efficacious for such use within the terms and conditions of EPA registration.
- ☐ As appropriate EPA–registered pesticide product is not available.

8. If this registration is an amendment to an EPA–registered product, is it for a "new use" as defined in 40 CFR 152.3?
☐ Yes (discuss in Item 13 below) ☒ No

9. Has an EPA Registration or Experimental Use Permit for this chemical even been (check applicable box(es), if known):
☒ Sought ☒ Issued ☐ Denied ☐ Cancelled ☐ Suspended
☒ Registration ☐ Experimental Use Permit ☐ No Previous Permit Action

10. Has FIFRA section 24(c) registration for this use of the product ever, by another State, been (check appropriate box(es), if known):
☒ Sought ☒ Issued ☐ Denied ☐ Revoked

If any of the above are checked, list States in Item 13 below.

☐ No FIFRA section 24(c) Action

11. Endangered Species Act: (Give details in Item 13 or on a separate page, properly identified and attached to this form.)

Identify the counties where this pesticide will be used. If Statewide, indicate "all."
ALL

Provide a list of Federally protected endangered/threatened species which occur in the areas of proposed use.

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

12. Indicate use status of Special Local Need, i.e.. planned dates of use:
From: May To: December 31, 2022

Signature of Applicant or Authorized Representative
Pat Dinnen

Title Pat Dinnen
Regulatory Manager

Telephone Number 336-632-2494
Date April 25, 2017

13. Comments (attach additional sheet. if needed)
Comments to Item 6.b.(6): To allow application in non-bearing year to lowbush blueberry

Comments to Item 10: SLN issued in Maine for application in bearing year to lowbush blueberry

Determination by State Agency

This registration is for a Special Local Need and is being issued in accordance with section 24(c) of FIFRA, as amended. To the best of our knowledge, the information above is correct, except as noted in "Comments" below or in attachments

Name, Title. and Address of State Agency Official
Mary Tomlinson
Maine Board of Pesticides Control
28 State House Station
Augusta, Maine 04950

Title
Pesticides Registrar

Telephone Number 207-287-7544
Date

Comments (by State Agency Only)

Received by EPA

EPA Form 8570-25

Section 24(c) Special Local Need Label

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE

Callisto® Herbicide
For Weed Control in Lowbush Blueberry

EPA Reg. No. 100-1131
EPA SLN No. ME-xxxxxx

This label expires and must not be distributed or used in accordance with this SLN registration after December 31, 2022

Active Ingredient:	
Mesotrione (CAS No. 104206-82-8)	40.0%
Other Ingredients:	60.0%
Total:	100.0%

Callisto contains 4 lbs of active ingredient mesotrione per gallon.

KEEP OUT OF REACH OF CHILDREN
CAUTION

DIRECTIONS FOR USE

- It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
- This label must be in the possession of the user at the time of application.
- Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on the EPA-registered label.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR PEST CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

Specific Use Directions – Lowbush Blueberry – BEARING YEAR

For bearing year application only

Apply Callisto as a broadcast spray at a rate of 4.0 fl oz/A to lowbush blueberry for control or suppression of common lambsquarters, redroot pigweed, velvetleaf, wild mustard, spreading dogbane, blue violet, sheep sorrel, goldenrod and common ragweed. The application of Callisto can be made prior to weed emergence or after weed emergence but before weeds reach 5” in height.

The use of a non-ionic surfactant (NIS) type adjuvant at 0.25% v/v (1 qt/100 gallons of spray volume) is recommended.

Applications of Callisto during dry weather conditions and/or temperatures above 85 degrees can cause injury to lowbush blueberries. Applications of Callisto can cause yellowing or necrosis of leaves and under severe conditions, leaf drop may occur especially on “Sourtop” variety blueberries.

Restrictions:

1. Make only one application per year.
2. The application of Callisto must be made prior to lowbush blueberry bloom.
3. Do not harvest within 60 days of application.
4. Do not apply by air.

Specific Use Directions – Lowbush Blueberry – NON-BEARING YEAR

For Non-bearing year application only

Apply Callisto post-emergence to weeds up to three times on non-bearing pruned fields as a broadcast or spot spray at 2 oz/A when each new flush of weed regrowth has reached 4 to 6 inches or is at the 4-6 leaf stage. Inclusion of ammonium sulfate at 8.5 lb/100 gallons and 0.5% Activator 90 or other suitable non-ionic surfactant in the tank mix and sequential treatments as re-growth occurs are necessary for good control.

Restrictions:

1. Make no more than 3 applications in the non-bearing year.
2. Do not apply more than 6 oz/A in the non-bearing year.
3. The application of Callisto must be made in the non-bearing year of lowbush blueberry production.
4. Do not apply by air.

24(c) Registrant:
Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, NC 27419-8300

Label Code: ME1131021AA0417

Patricia (Pat) Dinnen
Regulatory Manager
State Registration/State Affairs

Syngenta Crop Protection, LLC
P.O. Box 18300
Greensboro, NC 27419-8300
www.syngenta.com

Tel. 336 632 2494
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pat.dinnen@syngenta.com

April 25, 2017

Ms. Mary E. Tomlinson
Pesticides Registrar & Water Quality Specialist
Board of Pesticides Control
Maine Department of Agriculture, Conservation and Forestry
28 State House Station
Augusta, ME 04333-0028

Subject: Callisto® Herbicide, EPA Reg. No. 100-1131
SLN Request for a Non-bearing Year Application to Lowbush Blueberry

Dear Ms. Tomlinson:

Syngenta Crop Protection, LLC is requesting to amend the ME-120001 Special Local Need label for Callisto Herbicide to add a non-bearing year application to lowbush blueberry. The current ME-120001 has a bearing year application to lowbush blueberry and Syngenta wishes to have one SLN label with both bearing year and non-bearing year application to lowbush blueberry. Dr. David Yarborough of The University of Maine has written a support letter and provided efficacy/crop safety data.

Enclosed in support of this submission are:

- EPA SLN Application Form 8570-25
- Draft SLN Label
- Letter of support from Dr. David Yarborough of The University of Maine
- Efficacy/Crop Safety Data from Dr. David Yarborough
- Federal Label for Callisto Herbicide
- SDS for Callisto Herbicide

If you have any questions please do not hesitate to call me at 336-632-2494 or email me at pat.dinnen@syngenta.com.

Sincerely,

Pat Dinnen

Pat Dinnen
Regulatory Manager

Enclosures

Wild Blueberry Office Deering Hall University of Maine, Orono 04469

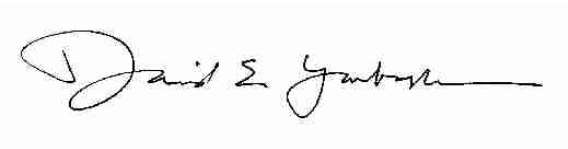
March 10, 2017

Mary Tomlinson
Pesticides Registrar/Water Quality Specialist
Maine Board of Pesticides Control
28 State House Station
Augusta. ME 04333

Dear Mary:

This letter is in support of the Syngenta request to renew the 24C crop year label use for Callisto to control weeds in wild blueberry fields in Maine. It also has a non-bearing section that supports changes in the application timing to make this treatment much more effective. Wild blueberry growers have limited options for crop year control of weeds such as dogbane which are not sufficiently controlled with the current label timing for the non-crop year applications. Roundup may be used for weeds taller than wild blueberries but would have to be used later in the season when the crop is present, so growers do not want to incur the fruit loss incurred by this type of application. The pre-bloom application of Callisto which has a different mode of action will control small dogbane plants and prevent them from growing so that they will not be present at harvest to cause both crop loss and quality when harvest occurs. The sequential timing for the non-crop use was developed from research done at the University of Maine which showed this was much more effective than the current two applications at two week intervals.

The reduction and yield and quality caused by weeds such as dogbane put the wild blueberry growers in Maine at a disadvantage, since this use is allowed in Canada. This 24C label will give Maine growers the same opportunity as growers in Atlantic Canada to control early emerging weeds in their wild blueberry fields.



David Yarborough PhD
Wild Blueberry Specialist
Professor of Horticulture
the University of Maine
5722 Deering Hall Rm. 414
Orono, ME 04469-5722
Email Davidy@Maine.edu

CC: Jeff Zelna, Syngenta

WEED MANAGEMENT

INVESTIGATORS: David E. Yarborough, Professor of Horticulture
Jennifer L. D'Appollonio, Assistant Scientist

13. TITLE: Comparison of multiple post-emergence Callisto applications for spreading dogbane (*Apocynum androsaemifolium*) control in wild blueberry fields.

METHODS: Spreading dogbane (*Apocynum androsaemifolium*) continues to be a major weed pest in wild blueberry fields. In spring 2015 we initiated a trial at the University of Maine's Blueberry Hill Experiment Station Farm, to examine the effect of Callisto and Matrix on dogbane control. Dogbane was sprayed post-emergence either once at 6 oz/a or twice at 3 oz/a, but neither rate fully controlled dogbane in either the prune or crop year.

In 2016, a follow-up trial was initiated at Cherryfield Foods' Pike Brook 3 Lot, which has had a large dogbane population. The trial was set up as a Completely Randomized Design with each plot split in half; the main treatments consisted of an untreated check, Callisto 2 oz/a + COC 1% v/v and Callisto 3 oz/a + COC 1% v/v. Six replications of 4-m^2 plots per main treatment were staked pre-emergence and half of each plot was treated pre-emergence with Velpar 2 lb/a on 10 May 2016. Once wild blueberry emerged, dogbane emergence and growth were tracked on a weekly basis and the plots were sprayed in entirety at approximately two week intervals for a total of three post-emergence Callisto applications on 26 May, 8 June and 22 June. Prior to each Callisto application, wild blueberry cover and phytotoxicity, dogbane cover and phytotoxicity, broadleaf weed cover and grass cover were assessed, and at 2.5 weeks after the last application, on 11 July. Cover data were determined by using the Daubenmire Cover Class system converted to percent, and phytotoxicity using a scale of 0-10 (0=no damage, 10=100% damaged/dead) which was converted to percent. The treatments were compared using Tukey's tests (α=0.05) to determine significant differences among all treatments, and t-tests (α=0.05) to compare Velpar versus no Velpar for each main treatment.

RESULTS:

All treatment comparisons

There were no significant differences in wild blueberry cover (Figure 1) or phytotoxicity (Figure 2). As expected, blueberry cover increased over time, with the Callisto 2 oz/a treatment ultimately having the highest cover regardless of Velpar application. There was initially some phytotoxicity observed at the May evaluation in all treatments; it was determined that this was due to Cherryfield Foods' driving through the trial area while spraying the rest of the field with Callisto 3 oz/a + NIS + Request on 18 May. Although they turned off the tractor's spray boom, residual pressure in the boom caused spray solution leakage from the nozzles onto plants in the trial area, and therefore was assessed as background injury because it could not be separated from injury due to our trial applications (Figures 2, 4). The wild blueberry recovered by the second evaluation and from thereon out, all blueberry and dogbane phytotoxicity was assumed to be from trial treatment effects.

Dogbane cover was not significantly different among treatments at the first three evaluations, but by the fourth evaluation Callisto at 2 oz/a with Velpar, and Callisto at 3 oz/a both with and without Velpar, controlled dogbane significantly better than the check, Velpar alone or Callisto 2 oz/a (Figure 3, Photo 1A-C). In fact, the former three treatments reduced

dogbane cover to less than 10% by July, and no new seedlings were observed (new seedlings had been observed in May and at both June evaluations). The two June evaluations and July evaluation had significant differences in dogbane phytotoxicity (Figure 4). The treatments with Velpar tended to have slightly more injury to dogbane than those without, but at all evaluations there were no differences between the Callisto treatments with Velpar compared to without Velpar. There was also no difference between the check and Callisto only treatments on 8 June, but on 22 June and 11 July the Callisto treatments resulted in significantly more dogbane injury compared to the check or Velpar alone. The greatest dogbane injury was ultimately in the Callisto 3oz/a + Velpar treatment, which correspondingly resulted in the lowest dogbane cover (2%).

There were no significant differences among treatments for broadleaf weed cover (Figure 5) or grass cover (Figure 6). Grass cover was extremely low in 2016, likely due to the hot dry summer; even the check had <1% grass cover at all evaluations and therefore, treatment differences or lack thereof could not be determined with certainty. Although there were no differences in broadleaf weed cover, the Callisto 2 oz/a treatment had the lowest cover overall at each evaluation, regardless of Velpar, while the 3 oz/a treatment had the highest regardless of Velpar.

T-tests

T-tests for examining the effects of Velpar addition to the main treatments yielded no significant differences for any of the variables assessed, for any of the treatments at any evaluation date. Therefore, the results are not presented here.

Figure 1. Wild blueberry cover following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).

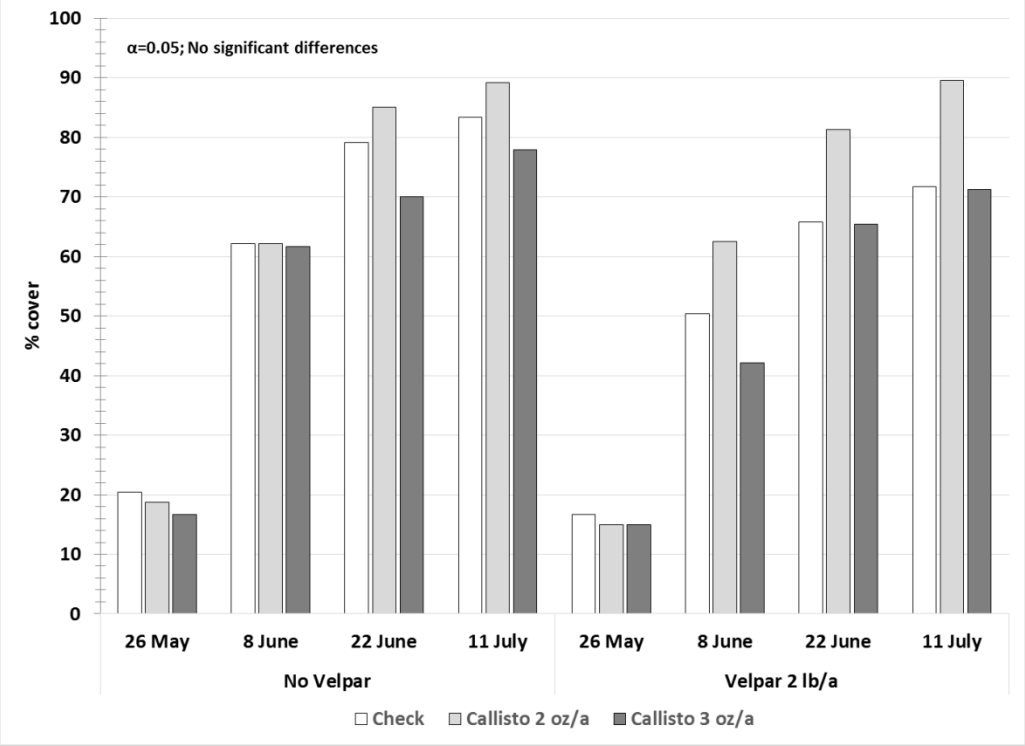


Figure 2. Wild blueberry phytotoxicity following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).

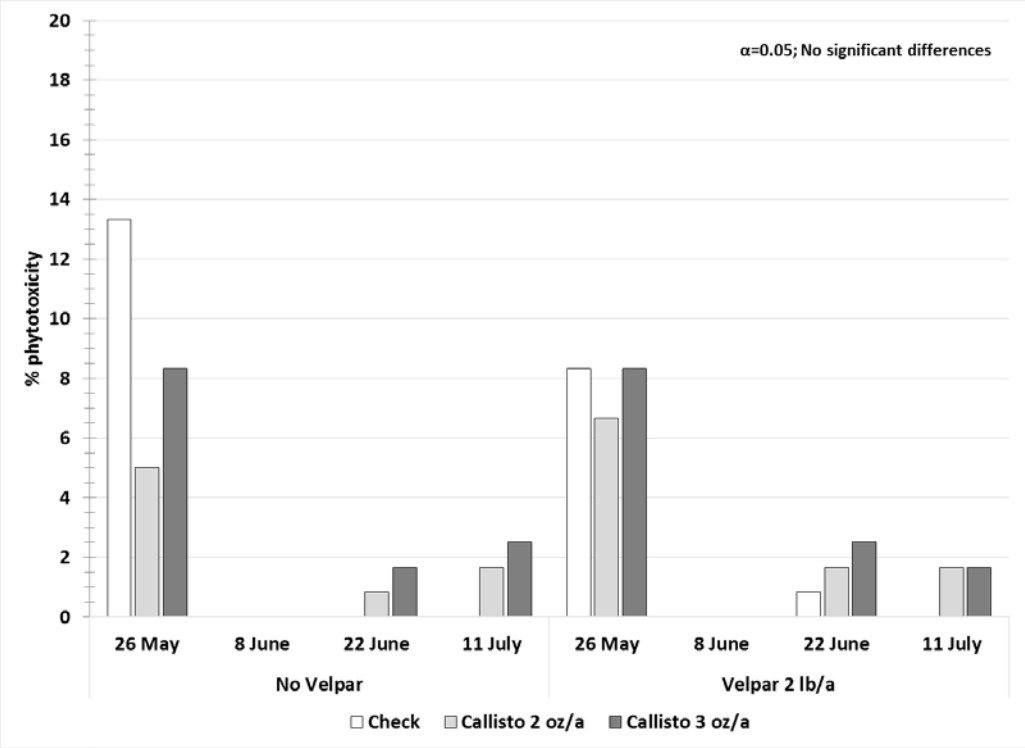


Figure 3. Dogbane cover following pre-emergence application of Velpar and post-emergence applications of Callisto (letters denote significant results only, at α=0.05).

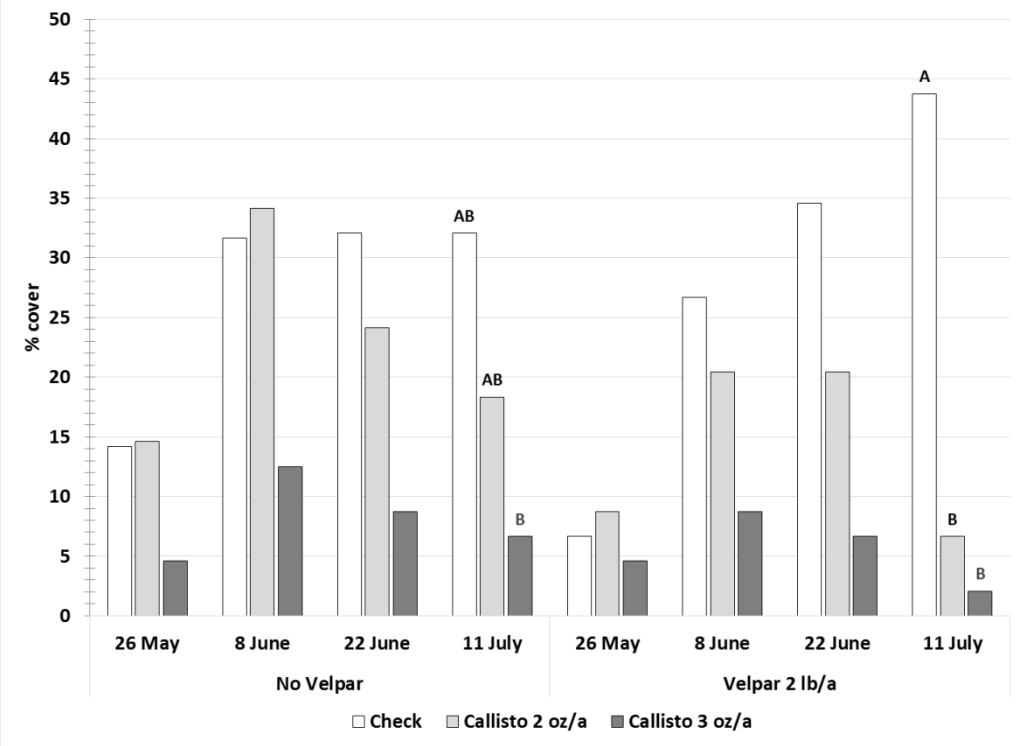


Figure 4. Dogbane phytotoxicity following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05).

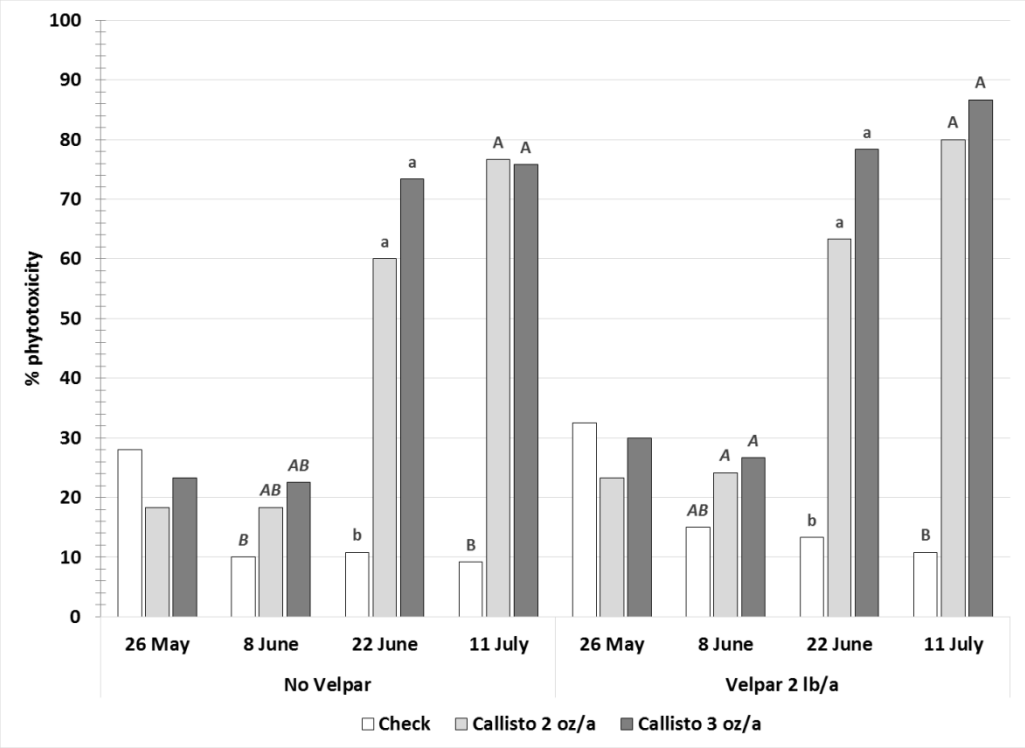


Figure 5. Broadleaf weed cover following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).

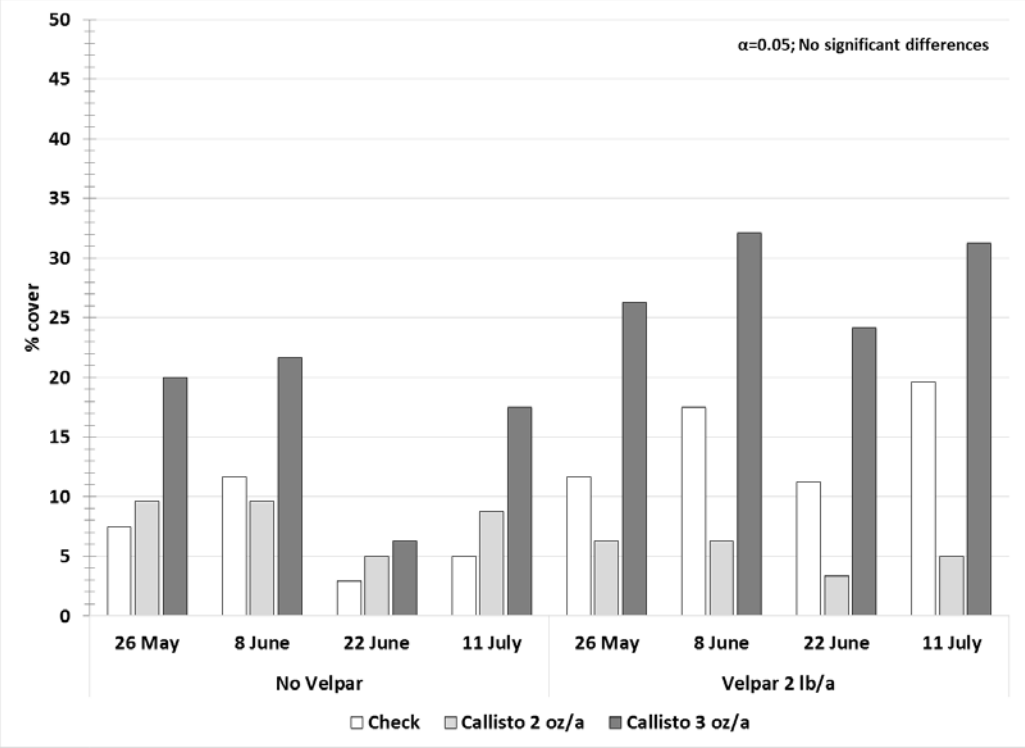
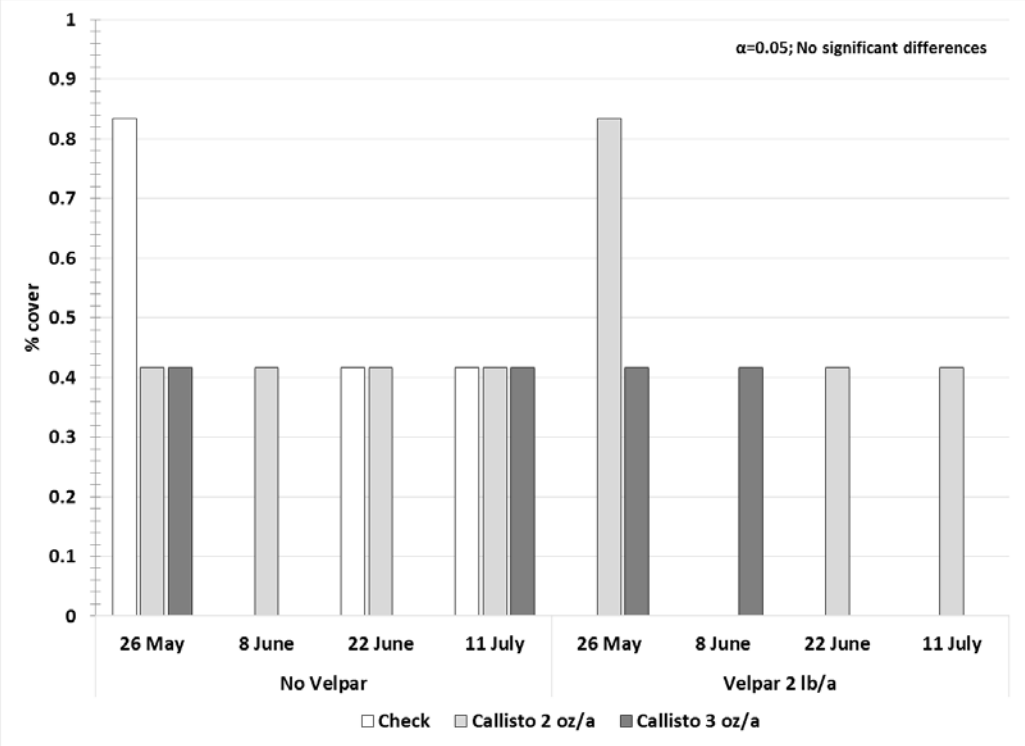


Figure 6. Grass cover following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).



CONCLUSIONS: Although the Velpar combinations and Callisto 3 oz/a alone almost eliminated dogbane and no new seedlings were observed in July, dogbane was not completely controlled by any treatment. Some stems which appeared dead on 22 June showed slight regrowth of lateral leaves in July (Photo 2). Because dogbane is perennial, it is uncertain whether the reduction in root reserves from leafing out again would reduce or prevent emergence or reproduction the next year.

In contrast to the effects on dogbane cover, in which the Callisto 3 oz/a treatment was most effective in reducing dogbane and more so when combined with Velpar, the effect on other broadleaf weeds was the opposite. The higher rate of Callisto resulted in higher broadleaf weed cover, more so when combined with Velpar. The principal weed in this category was red sorrel (*Rumex acetosella*), another problem weed which is hard to control with Velpar or Callisto and is the subject of several University of Maine trials. We posit that the increase in broadleaf weeds with the higher rate of Callisto, namely red sorrel, is because the reduction of dogbane opened up the over story and increased the amount of light available which increased the growth of red sorrel, while at the same time any dogbane over story still present intercepted some spray solution so the red sorrel did not receive as much herbicide (Photo 1C).

The results of the t-tests indicate that the addition of Velpar does not significantly change the effects of Callisto on dogbane, although as stated above, there was a non-significant effect of slightly increased dogbane control and injury. Cherryfield Foods' herbicide regime for the same field resulted in less lateral regrowth of dogbane compared to the plants in the trial area. They applied Callisto 3 oz/a on 18 and 31 May with NIS and Request adjuvant, but they also hand wiped the plants with Roundup + Request on 18-20 June (Photo 1D).

Photo 1. Dogbane cover at the July 2016 evaluation in A) the untreated check, B) Callisto 2 oz/a no Velpar, C) Callisto 3 oz/a with Velpar, and D) Cherryfield Foods' treatments.

Photo 2. Example of lateral regrowth from nodes, in the trial area.

RECOMMENDATIONS: Pursue a 24-C label change to allow for more applications of Callisto

GROUP 27 HERBICIDE

PULL HERE TO OPEN

Callisto® Herbicide

syngenta®

For Control of Annual Broadleaf Weeds in Field Corn, Seed Corn, Yellow Popcorn, Sweet Corn, and Other Listed Crops

Active Ingredient:	
Mesotrione: (CAS No. 104206-82-8)	40.0%
Other Ingredients:	60.0%
Total:	100.0%

Contains 4 lb of active ingredient mesotrione per gallon.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

Callisto Plant Technology®

EPA Reg. No. 100-1131 EPA Est. 100-NE-001

Product of Switzerland
Formulated in the USA

SCP 1131A-L1P 0515
4054864

1 gallon
Net Contents

™

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by the poison control center or doctor. • Do not give anything to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOTLINE NUMBER For 24-Hour Medical Emergency Assistance (Human or Animal), or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call **1-800-888-8372**	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes, or clothing.

continued…

PRECAUTIONARY STATEMENTS *(continued)*

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

Surface Water Advisory

This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. 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 for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Physical and Chemical Hazards

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

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.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Shoes plus socks
- Chemical-resistant gloves

PRODUCT INFORMATION

Callisto is a systemic preemergence and postemergence herbicide for the selective contact and residual control of broadleaf weeds in field corn, seed corn, yellow popcorn, sweet corn, and other listed crops. When used preemergence, weeds take up the product through the soil during emergence. Dry conditions following application may reduce the preemergence activity of Callisto. If an activating rain (0.25 inches) is not received within 7-10 days after a preemergence application, where appropriate, rotary hoeing is suggested to activate the herbicide. When used postemergence, susceptible weeds take up the herbicide through the treated foliage and cease growth soon after application. Complete death of the weeds may take up to 2 weeks. The product is absorbed through the soil and/or by the foliage of emerged weeds.

Callisto is not effective for the control of most grass weeds. Preemergence grass herbicides or postemergence grass herbicides can be tank mixed with Callisto to provide broad spectrum weed control in corn (see appropriate section of label for this information). Callisto can be applied postemergence following a preemergence grass herbicide application. Callisto can also be used in combination with a burndown herbicide, prior to planting, to provide added burndown and residual weed control in field corn, seed corn, yellow popcorn, and sweet corn.

RESISTANCE MANAGEMENT

Callisto is a **Group 27 Herbicide** (contains the active ingredient mesotrione).

Naturally occurring biotypes of certain broadleaf weed species with resistance to triazines, glyphosate, PPO, HPPD and ALS inhibiting herbicides are known to exist. Performance of Callisto is not affected by the presence of biotypes resistant to triazines, glyphosate, PPO or ALS inhibiting herbicides.

To prevent the risk of weeds developing resistance to Callisto in corn, always use full labeled rates. If applying Callisto postemergence after a mesotrione-containing preemergence herbicide, always add atrazine as a tank mix partner. No more than 0.24 lb of mesotrione active ingredient must be applied per acre of corn per year (equivalent of 7.7 fl oz per acre per year of Callisto). If additional herbicide must be applied, it is recommended that a different mode of action be used, i.e., other than an HPPD inhibitor (Group 27 Herbicide). Callisto must be applied at full label rates to help prevent selection for, or population shifts toward, marginally tolerant weed species and/or species biotypes.

INTEGRATED PEST (WEED) MANAGEMENT

Callisto should be integrated into an overall weed and pest management strategy whenever the use of a herbicide is required. Practices known to reduce weed development (tillage, crop competition) and herbicide use (weed scouting, proper application timing, banding) should be followed wherever possible. Consult local agricultural and weed authorities for additional IPM strategies established for your area.

USE RESTRICTIONS

Do not apply Callisto to white popcorn or ornamental (Indian) corn.

Do not cultivate corn within 7 days before or after a Callisto application as weed control from the Callisto application may be reduced.

Do not apply this product through any type of irrigation system unless specified otherwise under the specific crop section on the label.

Do not apply this product with suspension fertilizers as the carrier.

Do not apply Callisto postemergence in a tank mix with emulsifiable concentrate grass herbicides, unless specifically addressed under one of the tank mix sections of this label, or injury may occur.

Do not use aerial application to apply Callisto unless specified otherwise under the specific crop section on the label.

USE PRECAUTIONS

Severe corn injury resulting in yield loss may occur if Callisto is applied postemergence to corn that was treated with Counter® or Lorsban®.

Severe corn injury resulting in yield loss may occur if Callisto is applied foliar postemergence to corn in a tank mix with any organophosphate or carbamate insecticide.

Severe corn injury resulting in yield loss may occur if any organophosphate or carbamate insecticide is applied foliar postemergence within 7 days before or 7 days after Callisto application.

When weeds are stressed due to drought, heat, lack of fertility, flooding, or prolonged cool temperatures, control can be reduced or delayed since the weeds are not actively growing. Weed escapes or regrowth may occur when application is made under prolonged stress conditions. Optimum weed control will be obtained if an application of Callisto is made following label directions when weeds are actively growing.

Callisto may be applied with pyrethroid type insecticides (e.g., Warrior®).

SPRAY DRIFT DIRECTIONS

Avoid drift onto adjacent crops and other nontarget areas.

RESTRICTION: For aerial application use only nozzles producing coarse-ultra coarse droplets. Do not use nozzles producing fine-medium size droplets.

Do not apply when weather conditions may cause drift to nontarget areas. Drift may result in injury to adjacent crops and vegetation. To avoid spray drift, DO NOT apply when wind speed is greater than 10 mph or during periods of temperature inversions. Use of larger droplet sizes will also reduce spray drift.

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR.

The interaction of equipment and weather related factors determine the potential for spray drift. The applicator is responsible for considering all these factors when making a decision.

Information on Droplet Size

The most effective way to reduce spray drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions. Refer to the Aerial Application section for specific instructions regarding droplet size.

Controlling Droplet Size

- Volume – Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure – Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher rate nozzles instead of increasing pressure.
- Number of Nozzles – Use the minimum number of nozzles that provide uniform coverage.

Sensitive Areas

The pesticide must only be applied when the potential for drift to adjacent sensitive areas, (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, nontarget crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

ADDITIONAL SPRAY DRIFT DIRECTIONS FOR AERIAL APPLICATIONS

The distance of the outer-most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.

Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they must be observed.

Spray must be released at the lowest height consistent with effective weed control and flight safety.

For best results, ensure that each specific aerial application vehicle used is quantifiably pattern tested for aerial application of Callisto initially and every year thereafter.

RESTRICTION: For aerial application use only nozzles producing coarse-ultra coarse droplets. Do not use nozzles producing fine-medium size droplets.

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Do not make applications at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Increase swath adjustment distance with increasing drift potential (higher wind, smaller drops, etc.).

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Avoid application below 2 mph due to variable wind direction and high inversion potential. **Note:** Local terrain can influence wind patterns. Ensure that every applicator is familiar with local wind patterns and how they affect drift.

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Do not apply during a temperature inversion, because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures 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 or an aircraft smoke generator. Smoke that layers and moves laterally in a connected cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards and rapidly dissipates indicates good vertical air mixing.

The pesticide must only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

APPLICATION INFORMATION

PREEMERGENCE GROUND APPLICATION

Apply Callisto preemergence with a carrier volume of 10-60 gal/A.

Spray nozzles must be uniformly spaced, the same size and type, and must provide accurate and uniform application. Use spray nozzles that provide medium to coarse droplet size to provide good coverage and avoid drift. Apply in a spray volume of 10-60 gal/A using water or liquid fertilizer (excluding suspension fertilizers) as the carrier. Use a pump that can maintain a pressure of at least 35-40 psi at the nozzles and provide proper agitation within the tank to keep the product dispersed. Lower pressures may be used with extended range or drift reduction nozzles.

Always ensure that agitation is maintained until spraying is completed, even if stopped for brief periods of time. If the agitation is stopped for more than 5 minutes, resuspend the spray solution by running on full agitation prior to spraying.

POSTEMERGENCE GROUND APPLICATION

Spray nozzles must be uniformly spaced, the same size and type, and must provide accurate and uniform application. Use spray nozzles that provide medium to coarse droplet size to provide good coverage and avoid drift. Good weed coverage is essential for optimum weed control. Boom height for broadcast over-the-top applications must be based on the height of the crop – at least 15 inches above the crop canopy.

Apply in a spray volume of 10-30 gal/A using water as a carrier. Use a pump that can maintain a pressure of at least 35-40 psi at the nozzles and provide proper agitation within the tank to keep the product dispersed. Lower pressures may be used with extended range or drift reduction nozzles. When weed foliage is dense, use a minimum of 20 gal.

Flat fan nozzles of 80° or 110° are recommended for optimum postemergence coverage. Do not use floodjet nozzles or controlled droplet application equipment for postemergence applications.

Nozzles may be angled forward 45° to enhance penetration of the crop and provide better coverage. Ensure that all in-line strainer and nozzle screens in the sprayer are 50-mesh or coarser.

Always ensure that agitation is maintained until spraying is completed, even if stopped for brief periods of time. If the agitation is stopped for more than 5 minutes, resuspend the spray solution by running on full agitation prior to spraying.

Aerial Application

RESTRICTION: Callisto can be applied aerially only to corn and sugarcane.

RESTRICTION: For aerial application use only nozzles producing coarse-ultra coarse droplets. Do not use nozzles producing fine-medium size droplets.

Callisto may be applied aerially for preemergence or postemergence weed control in corn only in the following states: Alabama, Arkansas, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, North Dakota, Nebraska, Ohio, Oklahoma, South Dakota, Tennessee, and Texas.

Callisto may be applied aerially for preemergence or postemergence weed control in sugarcane only in the following states: Florida, Louisiana and Texas.

Applications must be made in a minimum of 2 gallons of water per acre.

SPRAY ADDITIVES

POSTEMERGENCE ADJUVANTS

When an adjuvant is to be used with this product, the use of an adjuvant that meets the standards of the Chemical Producers and Distributors Association (CPDA) adjuvant certification program is recommended.

The following adjuvant recommendations are intended primarily for Callisto use in corn. Refer to the use directions section of each crop section for specific adjuvant recommendations.

POSTEMERGENCE APPLICATIONS TO FIELD CORN AND SEED CORN

For postemergence applications made after the crop has emerged, add crop oil concentrate (COC) to the spray solution at the rate of 1.0 gal/100 gal of water (1.0% v/v). The use of a nonionic surfactant (NIS) at 1 qt/100 gallons of water (0.25% v/v) instead of COC is allowed, but the weed control achieved with COC is consistently better than NIS. **The use of methylated seed oil (MSO) adjuvants or MSO blend adjuvants for postemergence applications of Callisto may cause severe crop injury to occur. Do not use MSO adjuvants for postemergence use unless directed for a specific tank mix under the CALLISTO TANK MIXTURES FOR CORN section of this label, or unless permitted by a supplemental Callisto label.** In addition to COC, always add spray grade UAN (e.g., 28-0-0) to the spray solution at a rate of 2.5% (v/v) or AMS at 8.5 lb/100 gal of spray solution, except if precluded elsewhere on this label or by a supplemental Callisto label.

POSTEMERGENCE APPLICATIONS TO SWEET CORN AND YELLOW POPCORN

Do not add UAN or AMS when making postemergence applications of Callisto to yellow popcorn or sweet corn, or severe crop injury may occur.

For postemergence applications to yellow popcorn and sweet corn, the use of a nonionic surfactant (NIS) instead of a crop oil concentrate (COC) is recommended, so as to minimize the risk of crop injury. A COC may be used, and will increase the level of weed control achieved, especially under dry growing conditions, but the risk of crop injury is increased significantly under lush growing conditions. For optimum control, the addition of atrazine is recommended wherever rotational or local atrazine restrictions allow.

PREEMERGENCE ADJUVANTS

For Callisto preplant or preemergence applications, and where weeds are present, the use of any adjuvant for agricultural use is permitted. In these situations, MSO type adjuvants are typically better than COC type adjuvants, which are typically better than NIS type adjuvants for enhancing weed control. UAN or AMS can be added and typically provides better weed control than not adding one of these. If Callisto is being tank mixed with another registered herbicide in this situation, refer to the tank mix partner label for adjuvant precautions and restrictions.

SPRAY EQUIPMENT

Cleaning Equipment After Callisto Application

Special attention must be given to cleaning equipment before spraying a crop other than corn. Mix only as much spray solution as needed.

1. Flush tank, hoses, boom, and nozzles with clean water.
2. Prepare a cleaning solution of 1 gal of household ammonia per 25 gal of water. Many commercial spray tank cleaners may be used.
3. Use a pressure washer to clean the inside of the spray tank with this solution. Take care to wash all parts of the tank, including the inside top surface. If a pressure washer is not available, completely fill the sprayer with the cleaning solution to ensure contact of the cleaning solution with all internal surfaces of the tank and plumbing. Start agitation in the sprayer and thoroughly recirculate the cleaning solution for at least 15 minutes. All visible deposits must be removed from the spraying system.
4. Flush hoses, spray lines, and nozzles for at least 1 minute with the cleaning solution.
5. Dispose of rinsate from steps 1-3 in an appropriate manner.
6. Repeat steps 2-5.
7. Remove nozzles, screens, and strainers and clean separately in the ammonia solution after completing the above procedures.
8. Rinse the complete spraying system with clean water.

MIXING PROCEDURES

Refer to the **Crop Use Directions** sections of this label for recommended tank mixes.

Always refer to labels of other pesticide products for mixing directions and precautions which may differ from those outlined here. Use in accordance with the most restrictive of label limitations and precautions. No label dosage rates may be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing. Do not tank mix Callisto with any other insecticide, fungicide, fertilizer solution, or adjuvant not recommended on the label without testing compatibility, as poor mixing may result. It is recommended that the compatibility of any tank mix combination be tested on a small scale such as a jar test before actual tank mixing.

Follow the mixing instructions for adding Callisto to the spray tank:

1. Only use sprayers in good running condition with good agitation. Ensure the sprayer is cleaned according to instructions on the label of the product used prior to Callisto. For postemergence applications, use only clean water for the spray solution. Ensure that all in-line strainer and nozzle screens in the sprayer are 50-mesh or coarser. Do not use screens finer than 50-mesh.
2. Liquid fertilizer (excluding suspension fertilizers) may be used as the carrier for preemergence applications.
3. Begin to fill sprayer tank or premix tank with clean water and engage agitator. Agitation must be continued throughout the entire mixing and spraying procedure.
4. When the sprayer or premix tank is half full of water, add AMS and agitate until completely dispersed.
5. Next add Callisto slowly and agitate until completely dissolved. Wait at least 1 minute after the last of the Callisto has been added to the tank to allow for complete dispersion. A longer agitation period may be required to disperse Callisto when using cold water from sources such as deep drilled wells.
6. If tank mixing, add the tank mix product next.
7. Finally, add adjuvant and UAN, if needed, and then continue to fill tank to desired level with water.

WEEDS CONTROLLED

Callisto applied as directed in this label will control or partially control the weeds listed in Tables 1 and 2.

Where reference is made to weeds partially controlled, partial control can either mean erratic control (good to poor) or consistent control at a level below that generally considered acceptable for commercial weed control.

For best postemergence results, apply Callisto to actively growing weeds. Dry weather following preemergence application of Callisto may reduce residual weed control effectiveness. If irrigation is available, apply 1/2 to 1 inch of water after preemergence application. If irrigation is not available, a uniform shallow cultivation is recommended as soon as weeds emerge.

Callisto applied alone or in mixture with atrazine will not provide consistent or effective control of weeds identified as resistant to postemergence HPPD inhibiting herbicides.

Refer to the crop sections on this label for specific rates and use directions.

Table 1. Weeds Controlled With Postemergence Applications of Callisto

Weed Common Name	Weed Scientific Name	Callisto 3 fl oz/A	Callisto 2.5-3.0 fl oz/A + Atrazine[1]
		Apply to Weeds <5 Inches Tall[2]	
Amaranth, palmer	*Amaranthus palmeri*	PC[3]	C[3]
Amaranth, powell	*Amaranthus powellii*	C	C
Amaranth, spiny	*Amaranthus spinosus*	C	C
Atriplex	*Chenopodium orach*	C	C
Broadleaf signalgrass	*Urochloa platyphylla*	C[3]	C[3]
Buckwheat, wild	*Polygonum convolvulus*	PC	PC
Buffalobur	*Solanum rostratium*	C	C
Burcucumber	*Sicyos angulatus*	PC	C[3]
Carpetweed	*Mollugo verticillata*	C	C
Carrot, wild	*Daucus carota*	PC	C
Chickweed, common	*Stellaria media*	C	C
Cocklebur, common	*Xanthium strumarium*	C	C
Crabgrass, large	*Digitaria sanguinalis*	C[3]	C[3]
Dandelion	*Taraxacum officinale*	NC	PC
Dock, curly	*Rumex crispus*	PC	PC
Galinsoga	*Galinsoga parviflora*	C	C
Hemp	*Cannabis sativa*	C	C
Horsenettle	*Solanum carolinense*	PC	C
Jimsonweed	*Datura stramonium*	C	C
Horseweed (marestail)	*Conyza canadensis*	PC	C
Knotweed, prostrate	*Polygonum aviculare*	PC	PC
Kochia	*Kochia scoparia*	PC[3]	C[3]
Lambsquarters, common	*Chenopodium album*	C	C
Mallow, Venice	*Hibiscus trionum*	NC	C
Morningglory, entireleaf	*Ipomoea hederacea*	PC	C
Morningglory, ivyleaf	*Ipomoea hederacea*	PC	C
Morningglory, pitted	*Ipomoea lacunosa*	PC	C

Weed Common Name	Weed Scientific Name	Callisto 3 fl oz/A	Callisto 2.5-3.0 fl oz/A + Atrazine[1]
		Apply to Weeds <5 Inches Tall[2]	
Mustard, wild	*Brassica kaber*	C	C
Nightshade, black	*Solanum nigrum*	C	C
Nightshade, Eastern black	*Solanum ptycanthum*	C	C
Nightshade, hairy	*Solanum sarrachoides*	C	C
Nutsedge, yellow	*Cyperus esculentus*	PC	PC
Pigweed, redroot	*Amaranthus retroflexus*	C	C
Pigweed, smooth	*Amaranthus hybridus*	C	C
Pigweed, tumble	*Amaranthus albus*	C	C
Pokeweed, common	*Phytolacca americana*	PC	PC
Potatoes, volunteer	*Solanum* spp.	C	C
Pusley, Florida	*Richardia scabra*	C[3]	C[3]
Ragweed, common	*Ambrosia artemisiifolia*	PC	C
Ragweed, giant	*Ambrosia trifida*	C[3]	C
Sesbania, hemp	*Sesbania exaltata*	C	C
Sida, prickly (teaweed)	*Sida spinosa*	NC	C[3]
Smartweed, ladysthumb	*Polygonum persicaria*	C[3]	C
Smartweed, pale	*Polygonum lapathifolium*	C[3]	C
Smartweed, Pennsylvania	*Polygonum pensylvanicum*	C[3]	C
Sunflower, common	*Helianthus annuus*	C	C
Thistle, Canada	*Circium arvense*	NC	PC
Velvetleaf	*Abutilon theophrasti*	C	C
Waterhemp, common	*Amaranthus rudis*	C[3]	C
Waterhemp, tall	*Amaranthus tuberculatus*	C[3]	C

[1]Callisto tank mixture with atrazine is approved only for use on corn and sugarcane.

[2]Under certain situations weeds can be controlled at larger than listed sizes, however to protect crop yield, manage weed resistance and provide consistent control, treat weeds before they exceed 5 inches in height.

[3]Apply before weed exceeds 3 inches in height.

C = Control PC = Partial Control NC = Not Controlled

Table 2. Weeds Controlled With Preemergence Applications of Callisto

Common Name	Scientific Name	Callisto Applied Alone	Callisto + Atrazine[1]
Amaranth, palmer	*Amaranthus palmeri*	C	C
Amarath, powell	*Amaranthus powellii*	C	C
Amaranth, spiny	*Amaranthus spinosus*	C	C
Broadleaf signalgrass	*Urochloa platyphylla*	PC	PC
Buffalobur	*Solanum rostratum*	C	C
Burclover, California	*Medicago polymorpha*	C	-
Carpetweed	*Mollugo verticillata*	C	C
Carrot, wild	*Daucus carota*	C	-
Chickweed, common	*Stellaria media*	C	C
Chickweed, mouseear	*Cerastium vulgatum*	C	-
Cocklebur, common	*Xanthium strumarium*	PC	C
Crabgrass, large	*Digitaria sanguinalis*	PC	PC
Dandelion, common (seedling)	*Taraxacum officinale*	C	-
Deadnettle, purple	*Lamium purpureum*	C	-
Dock, curly	*Rumex crispus*	C	-
Eveningprimrose, cutleaf	*Oenothera laciniata*	C	-
Fiddleneck, coast	*Amsinckia intermedia*	C	-
Filaree, redstem	*Erodium cicutarium*	C	-
Filaree, whitestem	*Erodium moschatum*	C	-
Fleabane, hairy	*Conyza bonariensis*	C	-
Galinsoga	*Galinsoga parviflora*	C	C
Geranium, Carolina	*Geranium carolinianum*	C	-
Groundcherry, smooth	*Physalis subglabrata*	C	-
Groundsel, common	*Senecio vulgaris*	C	-
Henbit	*Lamium amplexicaule*	C	-
Horsenettle	*Solanum carolinense*	PC	-
Horseweed/marestail	*Conyza canadensis*	C	-
Jimsonweed	*Datura stramonium*	C	C
Kochia	*Kochia scoparia*	PC	C
Lambsquarters, common	*Chenopodium album*	C	C
Lettuce, prickly	*Lactuca serriola*	C	-
Mallow, common	*Malva neglecta*	C	-
Mayweed, chamomile	*Anthemis cotula*	C	-

Common Name	Scientific Name	Callisto Applied Alone	Callisto + Atrazine[1]
Morningglory, entireleaf	*Ipomoea hederacea*	PC	C
Morningglory, ivyleaf	*Ipomoea hederacea*	PC	C
Morningglory, pitted	*Ipomoea lacunosa*	PC	C
Nettle, burning	*Urtica urens*	C	-
Nightshade, eastern black	*Solanum ptycanthum*	C	C
Nightshade, hairy	*Solanum sarrachoides*	C	C
Pansy	*Viola tricolor*	C	-
Pigweed, redroot	*Amaranthus retroflexus*	C	C
Pigweed, smooth	*Amaranthus hybridus*	C	C
Pigweed, tumble	*Amaranthus albus*	C	C
Pineappleweed	*Matricaria matricariodes*	C	-
Puncturevine, common	*Tribulus terrestris*	C	-
Purslane, common	*Portulaca oleracea*	C	-
Pusley, common	*Richardia scabra*	PC	-
Ragweed, common	*Ambrosia artemisiifolia*	C	C
Ragweed, giant	*Ambrosia trifida*	PC	C
Redmaids	*Calandria caulescens*	C	-
Rocket, London	*Sisymbrium irio*	C	-
Shepherd's-purse	*Capsella bursa-pastoris*	C	-
Smartweed, ladysthumb	*Polygonum persicaria*	C	C
Smartweed, pale	*Polygonum lapathifolium*	C	C
Smartweed, Pennsylvania	*Polygonum pensylvanicum*	C	C
Sowthistle, annual	*Sonchus oleraceus*	C	-
Spanishneedles	*Bidens bipinnata*	C	-
Sunflower, common	*Helianthus annuus*	PC	C
Swinecress	*Coronopus didymus*	C	-
Tasselflower, red	*Emilia sonchifolia*	C	-
Velvetleaf	*Abutilon theophrasti*	C	C
Waterhemp, common	*Amaranthus rudis*	C	C
Vetch, common	*Vicia sativa*	C	-
Vetch, purple	*Vicia benghalensis*	PC	-
Waterhemp, tall	*Amaranthus tuberculatus*	C	C
Willowherb, panicle	*Epilobium brachycarpum*	C	-

[1]Callisto tank mixture with atrazine is approved only for use on corn grain sorghum and sugarcane. Refer to the crop sections on this label for specific use directions.

C = Control PC = Partial Control

ROTATIONAL CROPS

When Callisto is applied as directed on this label, follow the crop rotation intervals in Table 3. If Callisto is tank mixed with other products, follow the most restrictive product's crop rotation interval.

Table 3. Time Interval Between Callisto Application and Replanting or Planting of Rotational Crop

Crop	Replant/Rotational Interval
Asparagus Corn (all types) Cranberry Flax Kentucky bluegrass grown for seed Millet, pearl Oats Rhubarb Ryegrass (perennial and annual) grown for seed Sorghum (grain and sweet) Sugarcane Tall fescue grown for seed	Anytime
Small grain cereals including wheat, barley and rye	4 Months
Alfalfa Blueberry Canola Cotton Currant Lingonberry Okra Peanuts Peas[1,2] Potato Rice Snap beans[1,2] Soybeans Sunflowers Tobacco	10 Months

Crop	Replant/Rotational Interval
Cucurbits Dry beans Red clover Sugar beets All other rotational crops	18 Months

[1]Plant these rotational crops only if the following criteria below have been met. If all criteria are not met, plant peas and snap beans a minimum of 18 months following Callisto application.

- A minimum of 20" of rainfall plus irrigation has been received between application and planting of the rotational crop.
- Soil pH is 6.0 or greater.
- Application of Callisto at 3 fl oz/A or less applied no later than June 30th the year preceding rotational crop planting.
- No other HPPD herbicides (e.g., Callisto® Xtra, Halex® GT, Lexar® EZ, Lumax® EZ, Zemax®, Armezon™, Balance® Flexx, Capreno®, Corvus®, Impact®, or Laudis®) were applied the year prior to planting peas and snap beans.

[2]Do not plant peas or snap beans on sand, sandy loam or loamy sand soils in Minnesota or Wisconsin.

CROP USE DIRECTIONS

CORN

Callisto may be applied by ground for preemergence or postemergence weed control in field corn, seed corn, yellow popcorn, and sweet corn.

Callisto may also be applied aerially for preemergence or postemergence weed control only in the following states: Alabama, Arkansas, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Texas.

Refer to seed company recommendations for use on field corn inbred lines. Special adjuvant restrictions must be followed for postemergence applications of Callisto in yellow popcorn or sweet corn (see the **SPRAY ADDITIVES** section of this label). Do not apply Callisto to white popcorn or ornamental (Indian) corn.

Postemergence applications (after crop emergence) of Callisto may cause crop bleaching in some yellow popcorn and sweet corn hybrids. Crop bleaching is typically transitory and has no effect on final yield or quality. However, herbicide sensitivity in yellow popcorn and sweet corn varies widely, and all yellow popcorn and sweet corn hybrids have not been tested. Contact your popcorn or sweet corn company, Fieldman, or University Specialist about hybrid recommendations before making a postemergence application of Callisto to yellow popcorn or sweet corn. Do not include nitrogen based adjuvants (UAN or AMS) when making postemergence applications of Callisto to yellow popcorn or sweet corn.

Temporary crop response (transient bleaching) from postemergence applications to field corn may occur under extreme weather conditions or when the crop is suffering from stress. Field corn quickly outgrows these effects and develops normally.

Do not apply more than a total of 7.7 fl oz (0.24 lb mesotrione active ingredient) of Callisto per acre per year. Do not make more than 2 applications of Callisto per year. Do not exceed 3.0 fl oz (0.094 lb ai/A) in a single postemergence application. Do not make the second application of Callisto within 14 days of the first application.

Apply Callisto for the control of broadleaf and grass weeds listed in Tables 1 and 2. Corn may be treated up to 30 inches tall or up to the 8-leaf stage of corn growth. Do not feed or harvest forage, grain, or stover within 45 days after application.

CALLISTO USED ALONE – POSTEMERGENCE

Apply Callisto at 3.0 fl oz/A per application. Always add an appropriate adjuvant to the spray tank (see the **SPRAY ADDITIVES** section of this label).

For best results, apply Callisto to actively growing weeds. For a list of weeds controlled see Table 1. Susceptible weeds which emerge soon after application of Callisto may be controlled after they absorb the herbicide from the soil. Callisto will not control most grass weeds.

Two postemergence applications of Callisto may be made with the following restrictions.

- Only one postemergence application may be made if Callisto has been applied preemergence. Do not exceed a total of two applications per year. Do not exceed a total of 7.7 fl oz/A (0.24 lb ai/A) of Callisto per year.
- Do not make the second application within 14 days of the first application.
- Application of Callisto at rates less than 3.0 fl oz/A (0.094 lb ai/A) postemergence may result in incomplete weed control and loss of residual control.
- Do not exceed a total of 6.0 fl oz/A (0.19 lb ai/A) for the two postemergence applications.
- If Callisto is applied postemergence to ground that received a preemergence application of a mesotrione-containing herbicide, atrazine must be tank mixed with Callisto.
- If atrazine is mixed with Callisto, do not apply to corn that is more than 12 inches in height.
- Corn may be treated up to 30 inches tall or up to the 8-leaf stage of corn growth. Do not harvest forage, grain, or stover within 45 days after application.

CALLISTO USED ALONE – PREEMERGENCE

Apply Callisto alone at 6.0-7.7 fl oz/A (0.188-0.24 lb ai/A) by ground sprayers in a spray volume of 10-30 gal of water (up to 80 gal if applied with liquid fertilizers) per acre for broadleaf weed control. For a list of weeds controlled, refer to Table 2. Callisto may be tank mixed with preemergence grass herbicides for grass control. Refer to the tank mix section for a list of partners.

CALLISTO TANK MIXTURES FOR CORN

Callisto may be tank mixed with other registered herbicides for improved spectrum of weed control in burndown, preemergence or postemergence applications. Additionally these tank mixtures can be used to include a different mode of action herbicide to help control or manage the development of resistant weed biotypes.

Burndown Tank Mixtures in Corn

Callisto may be applied in tank mixture with other registered herbicides for burndown plus residual weed control.

For improved broadleaf weed control with limited residual control prior to planting corn and before corn emergence, apply Callisto at 3.0 fl oz/A in tank mixes with Gramoxone® brands, Roundup® brands, Touchdown® brands, dicamba brands (e.g. Banvel®) and/or 2,4-D. For greater residual control, use 6.0-7.7 fl oz/A of Callisto (see Table 2) with the above products. Use the adjuvant system recommended by the burndown herbicide. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Preemergence Tank Mixtures in Corn

Callisto may be applied at a rate of 5.3-7.7 fl oz/A in tank mixture with other registered herbicides (Table 4) for preemergence residual weed control. Refer to Table 2 for a list of weeds controlled by Callisto and Callisto plus AAtrex® applied preemergence.

Table 4. Callisto Tank Mixtures for Preemergence Application in Corn[1]

AAtrex	Degree Xtra®	Harness Xtra® 5.6L
Bicep Lite II Magnum®	Dual II Magnum®	Keystone®
Bicep II Magnum®	Expert®	Keystone® LA
Cinch®	Fultime®	Outlook®
Cinch® ATZ	Guardsman Max®	Prowl®
Cinch® ATZ Lite	Harness®	Surpass® EC
Degree®	Harness Xtra®	TopNotch®

[1]Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Postemergence Tank Mixtures in Corn

The tank mixtures with Callisto identified in Table 5 may be applied postemergence to corn (i.e., after corn has emerged). Unless specified otherwise on this label or a Syngenta supplemental label, do not apply Callisto at less than 3.0 fl oz/A. Application of Callisto at rates less than 3.0 fl oz (0.094 lb ai/A) postemergence may result in a loss of residual control.

Always add an appropriate adjuvant to the spray tank (see the **SPRAY ADDITIVES** section of this label). Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled. Not all of the tank mix pesticides listed are registered for field corn, yellow popcorn, or sweet corn.

Table 5. Callisto Tank Mixtures for Postemergence Application in Corn

Tank-Mix Partners[1]	Directions
AAtrex® 4L AAtrex® Nine-O®	• Refer to Table 1 on this label for application rates and weeds controlled.
Accent® Accent® Q	• Use this mixture for additional grass control. Refer to product label for list of weeds controlled.
Basagran®	• Use this mixture for additional broadleaf weed control. Refer to product label for list of weeds controlled.
Basis® Basis Gold®	• Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Bicep II Magnum Bicep Lite II Magnum	• When using these tank mixtures, it is recommended to leave the nitrogen based adjuvant (UAN or AMS) out of the mixture or apply as a post-directed spray to minimize contact with crop foliage. • To further reduce the risk of crop injury, the user may also leave out the crop oil concentrate (COC), or replace it with a nonionic surfactant (NIS). • In all cases, the control of emerged weeds may be reduced somewhat due to less than optimum adjuvant effect or weed coverage.
Buctril® Moxy®	• Use this mixture for additional broadleaf weed control. • Add Buctril (2 lb/gal) or Moxy (2 lb/gal) at a rate up to 6 fl oz/A. • Add Buctril (4 lb/gal) at a rate up to 3 fl oz/A.

Tank-Mix Partners[1]	Directions
Expert	• For use only in glyphosate tolerant corn (e.g. Agrisure® GT, Roundup Ready®). • Application of this mixture to a corn hybrid that is not glyphosate tolerant will result in crop death. • Do not add urea ammonium nitrate (UAN) or methylated seed oil (MSO) type adjuvants to this tank mixture or crop injury may occur.
Ignite® Ignite® 280 SL	• Use this tank mixture only on corn designated as LibertyLink® or warranted as being tolerant to glufosinate. • Application of this mixture to a corn hybrid that is not glufosinate tolerant will result in severe crop injury or death. • Do not use crop oil concentrate (COC) as an adjuvant for this mixture or severe crop injury may occur.
Lightning®	• For use only on corn designated as Clearfield® corn or warranted by BASF as being tolerant to Lightning Herbicide. • Application of this mixture to a corn hybrid that is not Lightning tolerant will result in severe crop injury or death. • Do not use a Methylated Seed Oil (MSO), or an MSO blend with this mixture or severe crop injury may result.
Northstar®	• Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Peak®	• Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Spirit®	• Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Steadfast® Steadfast® ATZ Steadfast® Q	• Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Stout®	• Use this mixture for additional weed control. Refer to product label for list of weeds controlled.

continued…

Table 5. Callisto Tank Mixtures for Postemergence Application in Corn *(continued)*

Tank-Mix Partners[1]	Directions
Touchdown Roundup Solo glyphosate products	• For use only in glyphosate tolerant corn (e.g. Agrisure GT, Roundup Ready). • Application of this mixture to a corn hybrid that is not glyphosate tolerant will result in crop death. • Add spray-grade ammonium sulfate (AMS) at a rate that delivers 8.5-17.0 lb of AMS/100 gallons of water. • If the glyphosate product label calls for an adjuvant in addition to AMS, add a non-ionic surfactant (NIS) at 0.25-0.5% v/v (1-2 quart/100 gallons). • Do not add urea ammonium nitrate (UAN), crop oil concentrate (COC), or methylated seed oil (MSO) type adjuvants to this tank mixture or crop injury may occur.

[1]Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

ASPARAGUS

Callisto can be applied broadcast or banded at a rate of 3.0-7.7 fl oz/A to asparagus as a spring application prior to spear emergence, as a post-harvest application (after final harvest), or both.

Use the 3.0 fl oz/A rate for postemergence control or partial control of the emerged weeds listed in Table 1. Use the 6.0-7.7 fl oz/A rate for preemergence control or partial control of the weeds listed in Table 2. For banded applications, the application must be made to account for band width, i.e. to deliver 3.0-7.7 fl oz per treated acre. For the best preemergence weed control with spring applications, Callisto must be applied after fern mowing, disking or other tillage operation but prior to asparagus spear emergence.

When making post-harvest applications, the rate applied preemergence in the spring must be taken into account so as not to exceed the 7.7 fl oz/A/year rate limit. Post-harvest applications must be made in a way that minimizes contact with any standing asparagus spears or ferns and maximizes contact with the weeds and/or soil, e.g. by using a directed or semi-directed type application, or crop injury may occur. With post-harvest applications, the use of an adjuvant will increase the risk of crop injury.

If weeds are emerged at the time of the Callisto application, the addition of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v **or** a nonionic surfactant (NIS) at the rate of 0.25% v/v is recommended. In addition to COC or NIS, a spray grade UAN (e.g. 28-0-0) at

the rate of 2.5% v/v **or** ammonium sulfate (AMS) at the rate of 8.5 lb/100 gallons of spray solution may be added for improved burndown of emerged weeds. If weeds have not yet emerged, no adjuvant is recommended.

Restrictions:

1. Do not apply more than 7.7 fl oz/A of Callisto per year.
2. Do not make more than two Callisto applications per year.

BLUEBERRY, CURRANT (BLACK AND RED), LINGONBERRY, RASPBERRY (BLACK AND RED), AND BLACKBERRY

Callisto may be applied as a pre-bloom post-directed spray in high bush blueberry, lingonberry, red currant, black currant, black raspberry, red raspberry, and blackberry. For a list of weeds controlled see Tables 1 and 2. Callisto may be applied in bush or caneberries at a rate up to 6 fl oz/A. If a split application weed control program is desired, 3 fl oz/A followed by 3 fl oz/A may be used, but no more than two applications per crop per year are allowed and not more than 6 fl oz/A in total per year. If two applications are made, they must be made no closer than 14 days apart. The use of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v is recommended, but avoid using COC adjuvants that are injurious to blueberry and lingonberry leaves. Do not apply Callisto to blueberries and lingonberries after the onset of the bloom stage or illegal residues may occur.

In low bush blueberries, Callisto may only be applied in the non-bearing year. This application may be a broadcast application. Up to 6 fl oz/A of Callisto may be applied in a single application, or 3 fl oz/A followed by 3 fl oz/A if used in a split application program. No more than two applications per year are allowed and not more than 6 fl oz/A in total per year. If two applications are made, they must be made no closer than 14 days apart. The use of a crop oil concentrate (COC) type adjuvant at 1% v/v is recommended. Applications of Callisto during dry weather conditions and/or temperatures above 85° can cause injury to Lowbush blueberries. Applications of Callisto can cause yellowing or necrosis of leaves and under severe conditions, leaf drop may occur especially on “Sourtop” variety blueberries.

BLUEGRASS, RYEGRASS (ANNUAL AND PERENNIAL) AND TALL FESCUE GROWN FOR SEED

Callisto can be applied to bluegrass, annual ryegrass, perennial ryegrass, or tall fescue which is grown for seed. Callisto can be applied as a preemergence application to bare soil (new seeding) or as a postemergence application to an emerged grass crop.

Preemergence Application: Apply Callisto as a broadcast, surface spray at a rate of 6.0 fl oz/A to a newly seeded crop. The Callisto application must be made prior to crop and weed emergence. Rainfall or irrigation as the newly seeded grass crop emerges from the soil may increase the risk of injury from Callisto. Grass crop injury symptoms include temporary bleaching of newly emerged leaves, or in extreme conditions, stunting. For a list of preemergence weeds controlled or partially controlled see Table 2. In addition to the weeds listed in Table 2, Callisto applied preemergence will control mannagrass.

Postemergence Application: Apply Callisto as a broadcast postemergence spray at a rate of 3.0-6.0 fl oz/A to emerged bluegrass, perennial ryegrass or tall fescue grown for seed. Use the 3.0 fl oz/A rate for postemergence control or partial control of the weeds listed in Table 1. In addition to the weeds listed in Table 2, Callisto applied postemergence will control mannagrass (up to 3 tillers).

Use the 6.0 fl oz/A rate for postemergence weed control plus extended residual weed control (see Table 2). The addition of a crop oil concentrate type adjuvant at 1% v/v **or** a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v is recommended. Postemergence applications of Callisto may result in temporary bleaching of the grass crop.

In addition to COC or NIS, a spray grade UAN (e.g. 28-0-0) at the rate of 2.5% v/v **or** ammonium sulfate (AMS) at the rate of 8.5 lb/100 gallons of spray solution may also be added for improved control of emerged weeds. The addition of UAN or AMS will improve consistency of postemergence weed control but will also increase the risk of grass crop injury, especially at Callisto rates greater than 3.0 fl oz/A. If grass crop injury is a concern, do not add UAN or AMS to the spray solution.

Tank mixing other pesticides with Callisto postemergence may increase the risk of crop injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Callisto for applications made postemergence to the crop.

Restrictions:

1. Do not harvest the grass crop for seed or straw within 60 days following the application of Callisto.
2. Do not graze or feed forage from treated areas within 14 days following harvest of seed or straw and at least 74 days after application of Callisto.
3. Do not make more than two applications of Callisto per year.
4. Do not apply more than 6 fl oz/A in a single application and not more than 9 fl oz/A of Callisto per year.
5. Applications of Callisto to grasses grown for seed species not listed on this label may result in severe injury.

CRANBERRY

Callisto may be applied to bearing or non-bearing cranberry beds for control or suppression of bog St. John's wort (*Hypericum boreala*), rushes (*Juncus canadensis, J. effuses, J. bufonlus, J. tenuis*), sedges spp. (*Carex* spp.), yellow loosestrife (*Lysimachia terrestris*) and silverleaf (*Potentilla pacifica*) in addition to the weeds listed in Tables 1 and 2. Callisto may be applied in cranberries at a rate up to 8 fl oz/A. Apply no more than two applications per crop per year and not more than 16 fl oz/A in total per year. If two applications are made, they must be made no closer than 14 days apart. The use of a crop oil concentrate (COC) type adjuvant at 1% v/v or non-ionic surfactant (NIS) at 0.25% v/v is recommended. Avoid using COC adjuvants that are injurious to cranberry leaves. In non-bearing cranberries, make the Callisto application(s) after the bud break stage, but not less than 45 days before flooding in fall or winter. In bearing cranberries, make the Callisto application(s) after the bud break stage, but not less than 45 days prior to flooding or harvest.

Callisto may be applied through irrigation systems (chemigation) including center pivot or solid set.

Chemigation – Sprinkler Irrigation Application for Cranberry Only

Check the irrigation system to ensure uniform application of water to all areas. Thorough coverage of foliage is required for good control. Good agitation in the pesticide supply tank should be maintained prior to and during the entire application period. Apply by injecting the recommended rate of Callisto Herbicide into the irrigation system using a metering device that will introduce a constant flow and by distributing the product to the target areas in 0.1-0.2 acre-inch of water. In general, use the least amount of water in this range required for proper distribution and coverage.

Once the application is completed, flush the entire irrigation and injection system with clean water before stopping the system. In addition to the above recommendations, if application is being made during a normal irrigation set of a stationary sprinkler, the recommended rate of Callisto Herbicide for the area covered should be injected into the system only during the end of the irrigation set for sufficient time to provide adequate coverage and product distribution.

Chemigation Use Precautions – Sprinkler Irrigation Application

1. Apply this product only through sprinkler irrigation systems including center pivot or solid set. Do not apply this product through any other type of irrigation system.
2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
3. If you have any questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers or other experts.

4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
5. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person shall shut the system down and make necessary adjustments should the need arise.
6. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back-flow.
7. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
8. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
10. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when pressure decreases to the point where pesticide distribution is adversely affected.
11. Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and are capable of being fitted with a system interlock.
12. Any alternatives to the above required safety devices must conform to the list of EPA approved alternative devices.
13. Do not apply when wind speed favors drift beyond the area intended for treatment or nonuniform distribution of treated water.

Additional Restrictions: 1) Do not apply directly to water or areas where surface water is present outside the bog system. 2) Do not contaminate water when disposing of equipment wash water or rinsate. 3) Do not apply within 10 feet of surface water outside the bog system. 4) Do not spray to runoff.

FLAX

Callisto may be applied preemergence in flax, i.e. after planting but before crop emergence, at a rate up to 6 fl oz/A. For a list of weeds controlled see Tables 1 and 2. Do not apply more than one application, and not more than 6 fl oz/A, per crop or per year in flax. If weeds are emerged at the time of application, the use of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v is recommended. In addition, a spray grade UAN (e.g., 28-0-0) at the

rate of 2.5% (v/v) or AMS at the rate of 8.5 lb/100 gal of spray solution may be added to improve the burndown of existing weeds. Applications of Callisto to emerged flax can result in severe crop injury.

OATS

Callisto can be applied preemergence or postemergence (but not both) for weed control in oats.

For preemergence control or partial control of the weeds listed in Table 2, apply Callisto broadcast at a rate of 6.0 fl oz/A prior to oat emergence. For best preemergence weed control, the Callisto application must be made prior to weed emergence.

For postemergence (after oat emergence) control or partial control of the weeds listed in Table 1, apply Callisto at a rate of 3.0 fl oz/A. For best results, Callisto must be applied to emerged weeds that are less than 5" tall. Postemergence applications of Callisto may result in temporary injury of the oat crop. Injury symptoms may include leaf bleaching, leaf burn and in extreme conditions, stunting.

If emerged weeds are present at the time of the Callisto application, the addition of a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v **or** a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v is recommended. In addition to COC or NIS, a spray grade UAN (e.g. 28-0-0) at the rate of 2.5% v/v **or** ammonium sulfate (AMS) at the rate of 8.5 lb/100 gallons of spray solution may be added for improved weed control. If emerged weeds are not present at the time of the Callisto application, no additives are recommended. If oat injury is a concern, eliminating the use of UAN or AMS will reduce the risk for postemergence crop injury. Additionally, the use of NIS instead of COC will also reduce the oat injury risk. However, weed control is also reduced if UAN or AMS is eliminated and when switching from COC to NIS.

Tank mixing other pesticides with Callisto postemergence may increase the risk of injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Callisto for applications made postemergence to the crop.

Restrictions:

1. Do not graze or feed forage from treated areas within 30 days following an application of Callisto.
2. Do not harvest oats within 50 days following the application of Callisto.
3. Do not make more than one application of Callisto per year.
4. Do not apply Callisto preemergence (prior to oat emergence) at more than 6.0 fl oz/A/year.
5. Do not apply Callisto postemergence at more than 3.0 fl oz/A/year.
6. If the oat crop treated with Callisto is lost or destroyed, oats may be replanted immediately. If Callisto was applied to the lost oat crop, no additional Callisto can be applied to the replanted oat crop.

OKRA

Callisto can be applied as a row-middle or a hooded post-direct treatment (but not both) for weed control in okra.

Preemergence row-middle application: Apply Callisto at a rate of 6.0 fl oz/A as a banded application to the row middles prior to weed emergence. For this banded application, leave one foot of untreated area over the okra row or 6" to each side of the planted row. For banded applications, the application must be made to account for band width, i.e. to deliver 6.0 fl oz per treated acre. Do not apply Callisto directly over the planted okra row or severe crop injury may occur. Injury risk is greatest on coarse textured soils (sand, sandy loam or loamy sand).

Postemergence hooded application: Apply Callisto at a rate of 3.0 fl oz/A as a postemergence directed application using a hooded sprayer for control or partial control of the weeds listed in Table 1. Okra must be at least 3" tall at the time of this application. It is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v be added to the spray solution. For postemergence hooded applications, the spray equipment must be set up to minimize the amount of Callisto that contacts the okra foliage or crop injury will occur. For best postemergence results, Callisto must be applied to actively growing weeds.

Restrictions:

1. Do not harvest okra within 28 days following the application of Callisto.
2. Do not make more than one application of Callisto per okra crop.
3. Do not apply Callisto as a row-middle application at more than 6.0 fl oz per treated acre per year.
4. Do not apply Callisto as a post-directed application at more than 3.0 fl oz per acre per year.
5. Do not apply Callisto as a broadcast preemergence or broadcast postemergence application to okra or severe injury will occur.
6. If the okra crop treated with Callisto is lost or destroyed, okra can be replanted only in the soil band that was not treated with Callisto.

PEARL MILLET

Callisto may be applied preemergence in pearl millet, i.e. after planting but before crop emergence, at a rate up to 6 fl oz/A. For a list of weeds controlled see Table 2. Do not apply more than one application, and not more than 6 fl oz/A per crop or per year in pearl millet. If weeds are emerged at the time of application, the use of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v is recommended. In addition, a spray grade UAN (e.g., 28-0-0) at the rate of 2.5% (v/v) or AMS at the rate of 8.5 lb/100 gal of spray solution may be added to improve the burndown of existing weeds. Applications of Callisto to emerged pearl millet can result in severe crop injury.

RHUBARB

Callisto can be applied prior to crop emergence for weed control in established rhubarb.

Apply Callisto at a rate of 6.0 fl oz/A to dormant (prior to any spring green-up) rhubarb for control or partial control of the weeds listed in Table 2. If weeds are emerged at the time of application, it is recommended that a crop oil concentrate (COC) type adjuvant at 1% v/v **or** a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v be added to the spray solution. Applications of Callisto to rhubarb that is not dormant may result in a temporary bleaching symptomology. Rainfall or irrigation after the Callisto application may increase the risk of injury to emerging rhubarb.

Restrictions:

1. Do not harvest rhubarb within 21 days following the application of Callisto.
2. Do not make more than one application of Callisto per year.
3. Do not apply Callisto at more than 6.0 fl oz/A/year.

SORGHUM (GRAIN AND SWEET)

Preemergence Application: Callisto can be applied preemergence or preplant non-incorporated up to 21 days before planting sorghum for control or partial control of the weeds listed in Table 2.

Apply Callisto preemergence at a rate of 6.0–6.4 fl oz/A as a broadcast non-incorporated application prior to sorghum emergence. Applying Callisto less than 7 days before sorghum planting will increase the risk of crop injury, especially if irrigation or rainfall is received following the application. Injury symptoms include temporary bleaching of newly emerging sorghum leaves. Applying Callisto more than 7 days (but not more than 21) prior to planting will reduce the risk of crop injury.

If Callisto is applied prior to planting, minimize disturbance of the herbicide treated soil barrier during the planting process in order to lessen the potential for weed emergence.

If emerged weeds are present at the time of the preemergence application, it is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v **or** a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v be added to the spray solution. In addition to COC or NIS, a spray grade UAN at a rate of 2.5% v/v **or** ammonium sulfate (AMS) at a rate of 8.5 lb/100 gallons of spray solution can be added to the spray solution.

Preemergence Application Restrictions:

1. Do not apply more than 6.4 fl oz/A of Callisto per year.
2. Do not apply Callisto to emerged sorghum or severe crop injury may occur.
3. Do not use Callisto in the production of forage sorghum, sudangrass, sorghum-sudangrass hybrids, or dual purpose sorghum.

4. Do not apply Callisto to sorghum that is grown on coarse textured soils (e.g. sandy loam, loamy sand, sand).
5. In the State of Texas, do not apply Callisto to sorghum grown south of Interstate 20 (I-20) or east of Highway 277.

Post-Directed: Callisto can be applied post-directed to grain sorghum for control or partial control of the weeds listed in Table 1. For best results, apply Callisto to actively growing weeds.

Apply Callisto at a rate of 3 fl oz/A as a post-directed application when the grain sorghum is a minimum of 8 inches tall. Make the application by directing the spray between the crop rows and towards the base of the grain sorghum plant. Direct application of Callisto onto grain sorghum foliage can result in crop injury including temporary bleaching. If crop injury does occur, newly emerging leaves following application are typically unaffected.

It is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v **or** a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v be added to the spray solution. In addition to COC or NIS, a spray grade Urea Ammonium Nitrate (UAN) at a rate of 2.5% v/v **or** ammonium sulfate (AMS) at a rate of 8.5 lb/100 gallons of spray solution can be added to the spray solution.

Callisto may be tank mixed with other herbicides registered for grain sorghum for improved spectrum of weed control. Additionally, these tank mixtures can be used to include a herbicide with a different mode of action to help control or manage the development of resistant weed biotypes.

Post-Directed Restrictions:

1. Do not apply more than one post-directed application of Callisto.
2. Do not apply more than 3.0 fl oz/A of Callisto post-directed and not more than 6.4 fl oz/A of Callisto per grain sorghum crop year.
3. Do not apply Callisto broadcast over-the-top to emerged sorghum or severe crop injury may occur.
4. Do not harvest grain sorghum for forage for 30 days following application.
5. Do not harvest for grain or stover for 60 days following application.
6. Do not apply Callisto after the sorghum seedhead has begun to emerge.
7. Do not use Callisto in the production of forage sorghum, sudangrass, or sorghum-sudangrass hybrids.

SUGARCANE

Callisto can be applied by ground for preemergence, postemergence over-the-top or post-emergence directed weed control in sugarcane.

Callisto may also be applied aerially for preemergence or postemergence weed control only in the following states: Florida, Louisiana and Texas.

Preemergence Applications: Apply Callisto for preemergence weed control at 6.0–7.7 fl oz/A after the planting of plant-cane or after harvest of ratoon-cane. For a list of weeds controlled preemergence, refer to Table 2. If some weeds are already emerged at the time of application, add a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v **or** a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v to the spray solution. In addition to COC or NIS, a spray grade UAN at a rate of 2.5% v/v **or** ammonium sulfate (AMS) at a rate of 8.5 lb/100 gallons of spray solution can be added to the spray solution. For improved preemergence weed control, AAtrex or Evik® can be tank mixed with Callisto. Refer to the tank mix partner label for specific rates and use directions.

Postemergence Applications: Apply Callisto postemergence at 3.0 fl oz/A for control of the weeds listed in Table 1. Postemergence applications may be made as a post-over-the-top or as a post-directed spray to the base of the sugarcane. If a preemergence application was made earlier in the season, only one postemergence application can be made. If no preemergence application was made earlier in the season, both a post-over-the-top and a post-directed application can be made. For best results, Callisto must be applied to actively growing weeds.

For postemergence applications, it is recommended that a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v **or** a nonionic surfactant (NIS) type adjuvant be added to the spray solution. In addition to COC or NIS, the use of a spray grade UAN (e.g. 28-0-0) at 2.5% v/v **or** ammonium sulfate (AMS) at a rate of 8.5 lb/100 gallons of spray solution can be added for improved control of weeds.

For additional postemergence weed control, Callisto can be tank mixed with atrazine, Asulox® and/or Envoke®. Refer to the tank mix product labels for specific rates and use directions.

Restrictions:

1. Do not apply more than 7.7 fl oz/A of Callisto as a preemergence application.
2. Do not apply more than 3.0 fl oz/A of Callisto in a postemergence application.
3. Do not make more than two applications of Callisto per year. If a preemergence application of Callisto is made, only one postemergence application is allowed.
4. Do not make two Callisto applications less than 14 days apart.
5. Do not apply more than 10.7 fl oz/A of Callisto per year.
6. Do not harvest sugarcane within 114 days following a post-over-the-top application of Callisto (114 day PHI).
7. Do not harvest sugarcane within 100 days following a post-directed application of Callisto (100 day PHI).

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Keep container tightly closed when not in use. Do not store near seed, fertilizers, or foodstuffs. Can be stored at temperatures as low as -20°F. Keep away from heat and flame.

Pesticide Disposal: Open dumping is prohibited. Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Handling [Less Than or Equal to 5 Gallons]

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Container Handling [Greater Than 5 Gallons]

Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the person refilling. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Container Handling [Greater Than 5 Gallons]

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions, or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

For non-emergency (e.g., current product information), call Syngenta Crop Protection at 1-800-334-9481.

Manufactured for:
Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, North Carolina 27419-8300

SCP 1131A-L1P 0515
4054864

GROUP 27 HERBICIDE

Callisto® Herbicide

For Control of Annual Broadleaf Weeds in Field Corn, Seed Corn, Yellow Popcorn, Sweet Corn, and Other Listed Crops

Active Ingredient:	
Mesotrione: (CAS No. 104206-82-8) . . .	40.0%
Other Ingredients:	60.0%
Total:	100.0%

Contains 4 lb of active ingredient mesotrione per gallon.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-1131 EPA Est. 100-NE-001

Callisto Plant Technology®

Manufactured for:
Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, North Carolina 27419-8300

SCP 1131A-L1P 0515 4054864

1 gallon
Net Contents

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements, pesticide storage and disposal statements, and directions for use inside booklet.

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes, or clothing.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Keep container tightly closed when not in use. Do not store near seed, fertilizers, or foodstuffs. Can be stored at temperatures as low as -20°F. Keep away from heat and flame.

Pesticide Disposal: Open dumping is prohibited. Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Handling: Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

syngenta®

KEEP OUT OF REACH OF CHILDREN.

CAUTION

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by the poison control center or doctor. • Do not give anything to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOTLINE NUMBER For 24-Hour Medical Emergency Assistance (Human or Animal), or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call **1-800-888-8372**	

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes, or clothing.

Environmental Hazards

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

Surface Water Advisory

This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. 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 for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Physical and Chemical Hazards

Do not use or store near heat or open flame.

Manufactured for:
Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, North Carolina 27419-8300

SCP 1131A-L2J 0515
4054861

(01) 0 07 02941 76824 6

Safety Data Sheet

CALLISTO® Herbicide

Date: 1/9/2015
Replaces: 1/9/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **CALLISTO® Herbicide**
Product No.: A12738A
Use: Herbicide
Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419
Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications: Specific Target Organ Toxicity: Repeated Category 2
Signal Word (OSHA): Warning
Hazard Statements: May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:

Precautionary Statements: Do not breathe mist, vapors, spray.
Get medical advice if you feel unwell.
Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: Flammable hydrogen gas may be formed on contact with incompatible metals. See "Conditions to Avoid", Section 10.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Ethylene Glycol	Ethylene Glycol	107-21-1	<15%
Other ingredients	Other ingredients	Trade Secret	>45%
2-[4-(methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione	Mesotrione	104206-82-8	40.0%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Not Applicable

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Flammable hydrogen gas may be formed on contact with incompatible metals. See "Conditions to Avoid", Section 10.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Spray solutions of this product should be mixed, stored and applied using only plastic, plastic-lined steel, stainless steel or fiberglass/plastic containers. Concentrate should not be stored or maintained in long-term contact with galvanized steel, carbon steel, aluminum, brass or cast iron.

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Not Applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Ethylene Glycol	Not Established	100 mg/m³ (ceiling) [aerosol]	Not Established	Not Applicable
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Mesotrione	Not Established	Not Established	5 mg/m³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Beige to tan liquid

Odor: Faint; pleasant

Odor Threshold: Not Available

pH: 2.4 - 2.8 @ 68°F (20°C)

Melting point/freezing point: Not Available

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): > 200°F

Flammable Limits (% in Air): Not Available

Flammability: Can burn in fire, releasing toxic vapors.

Vapor Pressure: Mesotrione < 4.3 x 10(-8) mmHg @ 68°F (20°C)

Vapor Density: Not Available

Relative Density: 1.2 g/ml ; 10 lbs/gal @ 68°F (20°C)

Solubility (ies): Mesotrione 160 mg/l @ 68°F (20°C) (99.7% pure)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: Spray solutions of this product should be mixed, stored and applied using only plastic, plastic-lined steel, stainless steel or fiberglass/plastic containers. Concentrate should not be stored or maintained in long-term contact with galvanized steel, carbon steel, aluminum, brass or cast iron.

Incompatible materials: None known.

Hazardous Decomposition Products: Not Available

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Not Applicable

Delayed, immediate and chronic effects of exposure: Not Applicable

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rat) :	> 5000 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 5000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 5.19 mg/l air - 4 hours
Eye Contact:	Mildly Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Mesotrione : Did not show reproductive effects in animal experiments.

Chronic/Subchronic Toxicity Studies

Mesotrione : No adverse effect has been observed in chronic toxicity tests.

Carcinogenicity

Mesotrione : Did not show carcinogenic effects in animal experiments.

Chemical Name	NTP/IARC/OSHA Carcinogen
Ethylene Glycol	No
Other ingredients	No
2-[4-(methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione	No

Other Toxicity Information

None

Toxicity of Other Components

Ethylene Glycol

Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice. Exposure to high concentrations of mists or aerosols may result in effects on the hematopoietic system and central nervous system with headache, dizziness and drowsiness. Severe kidney damage results from swallowing large amounts of ethylene glycol.

Other ingredients

Not Applicable

Target Organs

Active Ingredients

Mesotrione : Blood, eye, kidney, liver.

Inert Ingredients

Ethylene Glycol: Blood, kidney, CNS

Other ingredients: Not Applicable

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Mesotrione :

Fish (Rainbow Trout) 96-hour LC50 >120 mg/l

Fish (Bluegill Sunfish) 96-hour LC50 >120 mg/l

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 900 mg/l

Green Algae 72-hour EbC50 4.5 mg/l

Environmental Fate

Mesotrione :

The substance has low potential for bioaccumulation. Mesotrione has medium to high mobility in soil.

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Not regulated

Comments

Water Transport - International
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Mesotrione), Marine Pollutant
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Mesotrione)
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes, or clothing.

EPA Registration Number(s):
100-1131

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Ethylene Glycol <15% (CAS No. 107-21-1)

CERCLA/SARA 304 Reportable Quantity (RQ):
Report product spills > 3260 gal. (based on ethylene glycol [RQ = 5000 lbs.] content in the formulation) (CERCLA)

RCRA Hazardous Waste Classification (40 CFR 261):
Not Applicable

TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	1
Flammability:	1	Flammability:	1
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: B

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 11/26/2000
Revision Date: 1/9/2015 Replaces: 1/9/2015
Section(s) Revised: 2, 4, 7, 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
RE: EPA Special Local Need (SLN) [FIFRA, Section 24(c)] application to approve the use of Malathion 8 Aquamul, EPA Reg. No. 34704-474, on lowbush and highbush blueberries to control spotted wing drosophila
Date: May 3, 2017

****

Enclosed is the above referenced Special Local Need (SLN) [FIFRA, Section 24(c)] application and supporting documents for your consideration.

On February 25, 2013, the Board of Pesticides Control approved a Section 24(c) registration for use of Gowan Malathion 8 Flowable, to control spotted wing drosophila, in blueberries. On February 17, 2017, the Board also approved the use of Gowan Malathion 8 Flowable in cane berries. This request to approve a 24(c) registration for Malathion 8 Aquamul, EPA Reg. No. 34704-474, manufactured by Loveland Products, Inc., is based on economic considerations. The product is reported to be less expensive than the Gowan brand, thus, reducing costs to Maine growers. The SLN is for the same rate as Gowan brand.

The expiration date will be December 31, 2018 to align with the expiration date of the two Gowan malathion SLNs.

Please review the following documents and let me know if you have any questions.

- FIFRA, Section 24(c) application
- Malathion 8 Aquamul draft Maine SLN label
- Letter of support from Kelsey Riccio, Registration Manager, Loveland Products, Inc.
- Letter of support from Dave Yarborough, Ph.D., Maine Cooperative Extension Wild Blueberry Specialist
- Malathion 8 Aquamul Section 3 label
- Malathion 8 Aquamul MSDS

Please review these materials and let me know if you have any questions.

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

Form Approved. OMB No. 2070-0182 Approval expires 5-31-15

United States Environmental Protection Agency
Office of Pesticide Programs, Registration Division (7505C)
Washington, DC 20460

Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need

(Pursuant to section 24(c) of the Federal Insecticide, Fungicide, and Rodenticide Act, as Amended)

For State Use Only
Registration No. Assigned
Date Registration Issued

1. Name and Address of Applicant for Registration

Loveland Products, Inc.
PO Box 1286
Greeley, CO 80632-1286

2. Product is (Check one)

EPA-Registered	EPA Registration Number
[X]	34704-474
New (not EPA-registered) [ ] Attach EPA Form 8570-4, Confidential Statement of Formula for new products.	EPA Company Number 34704

3. Active Ingredient(s) in Product

Malathion

4. Product Name

Malathion 8 Aquamul

5. If this is a food/feed use, a tolerance or other residue clearance is required. Cite appropriate regulations in 40 CFR Part 180, 185, and/or 186.

6. Type of Registration (Give details in Item 13 or on a separate page, properly identified and attached to this form):

- [ ] a. To permit use of a new product.
- [X] b. To amend EPA registrations for one or more of the following purposes:
  - [ ] (1) To permit use on additional crops or animals.
  - [ ] (2) To permit use at additional sites.
  - [X] (3) To permit use against additional pests.
  - [ ] (4) To permit use of additional application techniques or equipment.
  - [X] (5) To permit use at different application rates.
  - [ ] (6) Other (specify below)

7. Nature of Special Local Need (check one)

- [ ] There is no pesticide product registered by EPA for such use.
- [ ] There is no EPA-registered pesticide product which, under the conditions of use within the State, would be as safe and/or as efficacious for such use within the terms and conditions of EPA registration.
- [X] An appropriate EPA-registered pesticide product is not available.

8. If this registration is an amendment to an EPA-registered product, is it for a "new use" as defined in 40 CFR 152.3 ?

[ ] Yes (discuss in Item 13 below) [X] No

9. Has an EPA Registration or Experimental Use Permit for this chemical ever been (check applicable box(es), if known):

[ ] Sought [X] Issued [ ] Denied [ ] Cancelled [ ] Suspended

[ ] Registration [ ] Experimental Use Permit [ ] No Previous Permit Action

10. Has FIFRA section 24(c) registration for this use of the product ever, by another State, been (check appropriate box(es), if known):

[ ] Sought [ ] Issued [ ] Denied [ ] Revoked

If any of the above are checked, list States in Item 13 below.

[X] No FIFRA section 24(c) Action

11. Endangered Species Act: (Give details in Item 13 or on a separate page, properly identified and attached to this form)

Identify the counties where this pesticide will be used. If Statewide, indicate "all." Provide a list of Federally protected endangered/threatened species which occur in the areas of proposed use.

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

12. Indicate use status of Special Local Need, i.e., planned dates of use:

From: 05/02/2017 To: 12/31/2018.

Signature of Applicant or Authorized Representative

13. Comments (attach additional sheet, if needed)

Title: Registration Manager

Telephone Number	Date
(970) 685-3579	2 May 2017

Determination by State Agency

This registration is for a Special Local Need and is being issued in accordance with section 24(c) of FIFRA, as amended. To the best of our knowledge, the information above is correct, except as noted in "Comments" below or in attachments.

Name, Title, and Address of State Agency Official

Mary Tomlinson
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333

Title: Pesticides Registrar

Telephone Number	Date
207-287-7544	

Comments (by State Agency Only)

Received by EPA

Paperwork Reduction Act Notice

The public reporting burden for this collection of information is estimated to average 2.5 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining needed data, and completing and reviewing this application form. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Chief, Information Policy Branch, 2136, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, DC 20460; and to Office of Management and Budget, Paperwork Reduction Project (2070-0055), Washington, DC 20503, marked "Attention Desk Officer for EPA."

*U.S. GPO: 1999-452-529/25004

SECTION 24[c] REGISTRATION

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE

MALATHION 8 AQUAMUL Organophosphate Insecticide

EPA Reg. No. 34704-474 **EPA SLN No.**

Expiration Date: 12/31/2018

DIRECTIONS FOR USE

- IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.
- THIS LABELING MUST BE IN THE POSSESSION OF THE USER AT THE TIME OF APPLICATION.
- FOLLOW ALL APPLICABLE DIRECTIONS, RESTRICTIONS, WORKER PROTECTION STANDARD REQUIREMENTS, AND PRECAUTIONS ON THE EPA REGISTERED LABEL.

SPOTTED WING DROSOPHILA CONTROL IN BLUEBERRIES

CROP	PEST	RATE (Pts./A)	DIRECTIONS	PRE-HARVEST INTERVAL (PHI)
Blueberries	Spotted Wing Drosophila	Up to 2.5	• The maximum application rate is 2.5 lbs AI/A (2.5 pts Malathion 8 Aquamul); and the maximum number of applications per year is 2. • Do not exceed a total maximum use rate of malathion from all sources of 5 lbs AI per acre per season. • The minimum retreatment interval is 7 days. • The Restricted Entry Interval (REI) is 12 hrs	1 Day

24[c] Registrant
Loveland Products, Inc.
PO Box 1286
Greeley, Colorado 80632-1286

Loveland PRODUCTS
Get Growing

May 2, 2017

Mary E. Tomlinson
Pesticide Registrar/Water Quality Specialist
Maine Board of Pesticides Control
28 State House Section
Augusta, ME 04333

Subject: EPA Reg No 34704-474-Malathion 8 Aquamul

Dear Ms. Tomlinson,

Please find enclosed an application for a 24c for Malathion Aquamul for the control of Spotted Wing Drosophila on Blueberries. Loveland is submitting this application per the request of the Cooperative Extension and Blueberry growers in Maine.

Enclosed please find the following:

24c label
Current label for Malathion 8 Aquamul (34704-474)
Registration Application
EPA form 8570-25
Letter from Main Cooperative Extension

Loveland Products, Inc. and Main Blueberry Growers request approval fo this request as soon as possible. Thank you for your cooperation. Should you have any questions, or need additional documents, please contact me at 970-685-3558 or email me at Kelsey.Riccio@cpsagu.com.

Sincerely

Kelsey L Riccio

Kelsey L. Riccio
Senior Manager, State Registrations
Loveland Products, Inc.
PO Box 1286
Greeley, CO 80632
Phone: (970)685-3558
Email: Kelsey.Riccio@cpsagu.com

Wild Blueberry Office Deering Hall University of Maine, Orono 04469

March 13, 2017

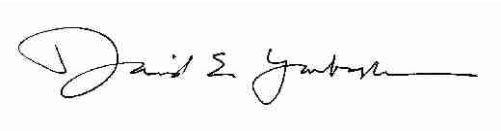
Mary E. Tomlinson
Pesticide Registrar/Water Quality Specialist
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333

Dear Mary:

The consensus is that a 24(c) label with the higher use rates is the best approach that we should take to obtain control of the spotted wing drosophila. This insecticide is needed to insure we can have different active ingredients for resistance management and it has a short PHI as well This This pest is increasing and will continue to be a serious threat, so this label is needed to insure its control. The Loveland product has the advantage of being 40% less expensive than the competitor, so its registration would provide an economic advantage for this new cost of production and enable Maine blueberry growers to remain economically competitive with Canadian and cultivated blueberries.

I request that the Board of Pesticides control approve the request from LOVELAND PRODUCTS, INC. for the renewal of the State of Maine 24(c) label for MALATHION 8 AQUAMUL EPA Registration Number: 34704-474 for the control of the spotted wing drosophila in blueberries in Maine for 2017.

Sincerely,



David Yarborough PhD
Wild Blueberry Specialist
Professor of Horticulture
the University of Maine
5722 Deering Hall Rm. 414
Orono, ME 04469-5722

Phone: 207-581-2923
TollFree: 800-897-0757 x 1
Fax: 207-581-2941
EMail Davidy@Maine.edu
www.wildblueberries.maine.edu

Loveland PRODUCTS

PEEL FILM HERE

MALATHION 8 AQUAMUL

Organophosphate Insecticide

FOR INSECT CONTROL ON LISTED ORNAMENTALS, FRUIT AND NUT TREES AND VEGETABLE PLANTS.

ACTIVE INGREDIENT:	% BY WT.
Malathion (O,O-Dimethyl phosphorodithioate of diethyl mercaptosuccinate)	81.8%
OTHER INGREDIENTS:	18.2%
TOTAL	100.0%

Contains 8.0 pounds of Malathion per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION

For Additional Precautionary Statements, Complete First Aid, Directions for Use, Storage and Disposal and Other Use Information, See Inside This Label Booklet.

EPA REG. NO. 34704-474

120815 V1D 01Y16

FORMULATED FOR
LOVELAND PRODUCTS, INC.®, P.O. BOX 1286, GREELEY, COLORADO 80632-1286

EPA EST. NO. 34704-MS-002

0 21077 42504 6

NET CONTENTS 2.5 GAL (9.46 L)

Loveland PRODUCTS

GROUP 1 B INSECTICIDE

MALATHION 8 AQUAMUL

Organophosphate Insecticide

FOR INSECT CONTROL ON LISTED ORNAMENTALS, FRUIT AND NUT TREES AND VEGETABLE PLANTS.

	% BY WT.
ACTIVE INGREDIENT:	
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KEEP OUT OF REACH OF CHILDREN

CAUTION

For Additional Precautionary Statements, Complete First Aid, Directions for Use, Storage and Disposal and Other Use Information, See Inside This Label Booklet.

EPA REG. NO. 34704-474

120815 V1D 01Y16

FORMULATED FOR
LOVELAND PRODUCTS, INC.®, P.O. BOX 1286, GREELEY, COLORADO 80632-1286

FIRST AID

If swallowed:	• Call a poison control center or doctor immediately for treatment advice. • Have a person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If in eyes:	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: This product may cause cholinesterase inhibition. Atropine is antidotal. 2-PAM may be effective as an adjunct to atropine.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION

Harmful if swallowed, inhaled, or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist or vapor. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical-resistant to this product are barrier laminate, butyl rubber, nitrile rubber, and viton. If you want more options, follow the instructions for category (F) on an EPA chemical resistance category selection chart.
For all formulations and all use patterns – mixers, loaders, applicators, flaggers, and other handlers must wear:
- Long sleeved shirt and long pants,
- Shoes plus socks,
- Chemical resistant gloves made of barrier laminate or butyl rubber, nitrile rubber, or viton ≥ 14 mils.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.
Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.
See engineering controls for additional requirements.

ENGINEERING CONTROLS
Pilots must use an enclosed cockpit in a manner that is consistent with the WPS for Agricultural Pesticides
[40 CFR 170.240(d)(6)]. Pilots must wear the PPE required on this labeling for applicators.

USER SAFETY RECOMMENDATIONS

Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic organisms, including fish and invertebrates.
This product may contaminate water through drift of spray in wind. This product has a high potential for runoff after application. Use care when applying in or to an area which is adjacent to any body of water, and do not apply when weather conditions favor drift from target area. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product.
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 for contamination of water from rainfall-runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours.
Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters.
This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. **Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.**
For commercial, industrial, and institutional use products packaged in containers equal or greater than 5.0 gallons or 50.0 pounds:
Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame. This product is incompatible with other chemicals (e.g. oxidizing agents).

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

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.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval (REI). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI). The REI for each crop is listed in the directions for use associated with each crop.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls,
- Shoes plus socks,
- Chemical-resistant gloves made of any waterproof material.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, or nurseries.

Do not enter or allow others to enter until sprays have dried.

PRECAUTIONS AND RESTRICTIONS

BUFFER ZONES FOR AERIAL APPLICATION: When making a non-ULV application with aerial application equipment, a minimum buffer zone of 25 feet must be maintained along any water body.

SPRAY DRIFT REQUIREMENTS

Observe the following requirements when spraying in the vicinity of aquatic areas such as, but not limited to, lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish ponds.

Droplet Size – Use the largest droplet size consistent with acceptable efficacy. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure.

For groundboom and aerial applications, use only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles, or a volume mean diameter (VMD) of 300 microns or greater for spinning atomizer nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Wind Direction and Speed – Make aerial or ground applications when the wind velocity favors on target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph. For all non-aerial applications, wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application.

Temperature Inversion – Do not make aerial or ground applications into areas of temperature inversions.

Inversions are characterized by stable air and increasing temperatures with increasing distance above the ground. Mist or fog may indicate the presence of an inversion in humid areas. Where permissible by local regulations, the applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Additional Requirements for Ground Applications – Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided. For groundboom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

Additional Requirements for Aerial Applications – For aerial applications, the spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or 90% rotor diameter.

Aerial applicators must consider flight speed and nozzle orientation in determining droplet size.

When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

APPLICATION THROUGH IRRIGATION SYSTEMS – CHEMIGATION

Apply this product only through sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move; flood (basin); furrow; border or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. Mix in clean supply tank the recommended amount of this product for acreage to be covered, and needed quantity of water.

Do not tank mix this product with other pesticides, surfactants or fertilizers unless prior use has shown the combination noninjurious under your conditions of use.

Follow precautionary statements and directions for all tank-mixed products.
On all crops, use sufficient gallonage of water to obtain thorough and uniform coverage, but not cause runoff or excessive leaching. This will vary depending on equipment, pest problem and stage of crop growth. Application of more or less than optimal quantity of water may result in decreased chemical performance, crop injury or illegal pesticide residues.
Meter this product into the irrigation water uniformly during the period of operation. Do not overlap application. Follow specified label rates, application timing, and other directions and precautions for crop being treated.
Continuous mild agitation of pesticide mixture may be needed to assure a uniform application, particularly if the supply tank requires a number of hours to empty.

CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS

Note: Loveland Products, Inc. does not encourage connecting chemigation systems to public water supplies. The following information is provided for users who have diligently considered all other application and water supply options before electing to make such a connection.
Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.
The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
Do not apply when wind speed favors drift beyond the area intended for treatment.

SPRINKLER CHEMIGATION (FOLIAR SPRAY USES)

The system must contain a functional check valve vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
Do not apply when wind speed favors drift beyond the area intended for treatment.

FLOOD (BASIN), FURROW AND BORDER CHEMIGATION (SOIL DRENCH USES)

Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.
Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

a. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
c. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
e. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
f. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

DRIP (TRICKLE) CHEMIGATION (SOIL DRENCH USES)

The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

APPLICATIONS

Use rates and use directions as noted below. Use higher rate when foliage is heavy or infestation is severe. Apply when pests first appear. Apply the following specified rates in sufficient water to thoroughly cover 1 acre. By ground, apply using a minimum of 10.0 gallons of water per acre and by air apply using a minimum of 2.0 gallons of water per acre (standard is 100 gallons of water for thorough coverage sprays). Do not apply orchard rates in less than 10.0 gallons of water per acre.

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Alfalfa Birdsfoot Trefoil Clover Lespedeza Vetch	Aphids Armyworm Clover leaf weevil Grasshoppers Leafhopper Spider mites	1.25	Apply to alfalfa in bloom only in the evening or early morning when bees are not working in the fields or are not hanging on the outside of hives. The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications is 2/ cutting; and the minimum retreatment interval is 14 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	0
Apricots	Aphids Codling moth Orange tortrix Soft brown scale Terrapin scale	1.5	Full coverage spray. The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	6
Asparagus	Asparagus beetle Thrips	1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	1
Avocados	Green house thrips Latania scale Omnivorous looper Orange tortrix Soft brown scale	4.0 to 4.7	The Restricted Entry Interval (REI) is 48 hrs. The maximum application rate is 4.7 lbs AI/A (4.7 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 30 days. Do not apply more than a total of 9.4 lbs of malathion per acre per calendar year.	7
Barley	Aphids Cereal leaf beetle Grasshoppers Greenbugs	1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Beets (Garden) Do not apply to Sugar Beets	Aphids	1.0 to 1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	7
Blackberries Boysenberries Dewberries Gooseberries Loganberries Raspberries	Aphids Rose scale Japanese beetle Leafhoppers Mites Thrips	2.0 1.0 to 2.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 2.0 lbs AI/A (2.0 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 6.0 lbs of malathion per acre per calendar year.	1
Blueberries	Cherry fruitworm Cranberry fruitworm Japanese beetle Plum curculio Sharpnose leafhopper	1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 5 days. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	1

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Broccoli Broccoli Raab (Rapini) Brussels Sprouts Cauliflower Chinese Broccoli Cavalo Broccolo Mizuna Mustard Spinach Rape Greens	Aphids Cabbage looper Flea beetle Imported cabbageworm	1.25	The Restricted Entry Interval (REI) is 48 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	2
Cabbage	Aphids Cabbage looper Flea beetle Imported cabbageworm	1.25	The Restricted Entry Interval (REI) is 48 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 6; and the minimum retreatment interval is 7 days. Do not apply more than a total of 7.5 lbs of malathion per acre per calendar year.	7
Cabbage, Chinese (Bok Choy, Napa) Cabbage Chinese Mustard	Aphids Cabbage looper Flea beetle Imported cabbageworm	1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Carrots, roots	Aphids Leafhoppers	1.0 to 1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Celery	Aphids Spider mites	1.0 to 1.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7
Cherries (sweet & tart)	Black cherry aphid Bud moth Cherry fruit fly Forbes scale Fruit tree leafroller Lesser peach tree borer San jose scale	1.75	May injure foliage of varieties such as Brooks, Tulare, Coral and some others. The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.75 lbs AI/A (1.75 pts Malathion 8 Aquamul); the maximum number of applications/year is 4; and the minimum retreatment interval is 3 days. Do not apply more than a total of 7.0 lbs of malathion per acre per calendar year.	3
Chestnuts	Mites	2.0 to 2.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 2.5 lbs AI/A (2.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 7.5 lbs of malathion per acre per calendar year.	2
Citrus (Grapefruit, Lemons, Limes, Oranges, Tangerines, Tangelos)	Aphids Black scale California red scale Citricola scale Florida red & Mediterranean fruit fly Purple scale Soft scale Thrips Yellow scale	CA: 7.5 pts or 1.5 pts; All other states: 4.5 pts or 1.5 pts	Do not apply during full bloom. **California Only:** At the maximum application rate of 7.5 lbs AI/A (7.5 pts Malathion 8 Aquamul), the Restricted Entry Interval (REI) is 72 hrs and the maximum number of applications/year is 1; **OR** at the maximum application rate of 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul) the REI is 24 hrs, the maximum number of applications/year is 3, the minimum application interval is 30 days and the minimum preharvest interval is 7 days. Do not apply more than a total of 7.5 lbs of malathion per acre per calendar year. **All States other than CA:** At the maximum application rate of 4.5 lbs AI/A (4.5 pts Malathion 8 Aquamul), the Restricted Entry Interval (REI) is 72 hrs and the maximum number of applications/year is 1; **OR** at the maximum application rate of 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul) the REI is 12 hrs, the maximum number of applications/year is 3, the minimum application interval is 30 days and the minimum preharvest interval is 7 days. Do not apply more than a total of 4.5 lbs of malathion per acre per calendar year.	7

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Collards	Aphids Cabbage looper Flea beetle Imported cabbageworm	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7
Corn (field)	Aphids Cereal leaf beetle Corn earworm Corn rootworm-adults Grasshoppers Sap beetle Thrips	1.0	For corn earworm, apply to silks as soon as they appear. The Restricted Entry Interval (REI) is 72 hrs for detasseling, and 12 hrs for all other activities. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	7
Corn, Sweet	Japanese beetles	1.0	The Restricted Entry Interval (REI) is 72 hrs for detasseling, and 12 hrs for all other activities. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 5 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	5
Cotton	Aphids Boll weevil Cotton leaf perforator Cotton leafworm Fall armyworm Fleahopper Garden webworm Grasshopper Leafhoppers Lygus bug Mites Thrips White Flies	1.5 to 2.5	The Restricted Entry Interval (REI) is 48 hrs. The maximum application rate is 2.5 lbs AI/A (2.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 7.5 lbs of malathion per acre per calendar year.	7
Cucumbers	Aphids Pickleworm Spider mites Thrips Cucumber beetle	1.0 to 1.75 1.75	Do not apply unless plants are dry. The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.75 lbs AI/A (1.75 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.5 lbs of malathion per acre per calendar year.	1
Currants	Currant aphid Imported currantworm Japanese beetle Mites	1.25 1.0 to 1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	1
Dandelions	Aphids	1.0 to 1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Eggplant	Aphids Spider mite Lace bugs	0.75 to 1.56 1.56	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 4; and the minimum retreatment interval is 5 days. Do not apply more than a total of 6.24 lbs of malathion per acre per calendar year.	3

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Endive	Aphids Mites	1.0 to 1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Figs	Dried fruit beetle Vinegar flies	2.0 pts plus 2.0 gals unsulfurized molasses as a bait spray	At the maximum application rate of 2.0 lbs AI/A (2.0 pts Malathion 8 Aquamul), the Restricted Entry Interval (REI) is 24 hrs. The maximum number of applications/year is 2, and the minimum application interval is 5 days; OR at the maximum application rate of 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul), the Restricted Entry Interval (REI) is 12 hrs. The maximum number of applications/year is 2, and the minimum application interval is 5 days. Do not apply more than a total of 4.0 lbs of malathion per acre per calendar year.	5
Flax	Grasshoppers	0.5	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 0.5 lb AI/A (0.5 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 1.5 lbs of malathion per acre per calendar year.	52
Garlic	Aphids Thrips	1.0 to 1.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.56 lbs AI/A (1.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 4.68 lbs of malathion per acre per calendar year.	3
Grapes	Drosophila Japanese beetle Leafhopper Mealybugs Spider mite Terrapin scale	1.88	May cause injury to foliage on some varieties. The Restricted Entry Interval (REI) is 72 hrs for girdling and tying, and 24 hrs for all other activities. The maximum application rate is 1.88 lbs AI/A (1.88 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 14 days. Do not apply more than a total of 3.76 lbs of malathion per acre per calendar year.	3
Grass Hay Grasses	Aphids Armyworms Grasshoppers Leafhoppers	1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 1. Do not apply more than a total of 1.25 lbs of malathion per acre per calendar year.	0
Guava	Fruit flies	0.75 pt + 1.0 lb partially hydrolyzed yeast protein or enzymatic yeast hydrolyzate	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 13; and the minimum retreatment interval is 3 days. Do not apply more than a total of 16.25 lbs of malathion per acre per calendar year.	2
Hops	Aphids	0.63	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 0.63 lb AI/A (0.63 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 1.89 lbs of malathion per acre per calendar year.	10
Horseradish	Aphids	1.0 to 1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	7
Kale	Aphids Cabbage looper Flea Beetle Imported cabbageworm	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 5 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Kohlrabi	Aphids Cabbage looper Flea Beetle Imported cabbageworm	1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Kumquats	Aphids Black scale California red scale Citricola scale Florida red scale Florida purple scale Soft scale Thrips Yellow scale Mediterranean fruit fly	4.5 1.0 to 4.5	Do not apply during full bloom. The Restricted Entry Interval (REI) is 48 hrs. The maximum application rate is 4.5 lbs AI/A (4.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 1; and the minimum retreatment interval is 30 days. Do not apply more than a total of 4.5 lbs of malathion per acre per calendar year.	7
Leeks	Aphids Thrips	1.0 to 1.56	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.12 lbs of malathion per acre per calendar year.	3
Lettuce	Aphids Leafhoppers Cabbage looper Mites	1.25 to 1.88 1.88	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.88 lbs AI/A (1.88 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 6 days for head and 5 days for leaf. Do not apply more than a total of 3.76 lbs of malathion per acre per calendar year.	14
Macadamia Nuts	Green stink bug	0.94	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 0.94 lb AI/A (0.94 pt Malathion 8 Aquamul); the maximum number of applications/year is 6; and the minimum retreatment interval is 7 days. Do not apply more than a total of 5.64 lbs of malathion per acre per calendar year.	1
Mango	Fruit flies	0.75 pt + 1.0 lb partially hydrolyzed yeast protein or enzymatic yeast hydrolyzate	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 0.9375 lb AI/A (0.9375 pt Malathion 8 Aquamul); the maximum number of applications/year is 10; and the minimum retreatment interval is 7 days. Do not apply more than a total of 9.375 lbs of malathion per acre per calendar year.	1
Melons (other than watermelon)	Aphids Cucumber beetle Pickleworm Spider mites Thrips	1.0	Do not apply unless plants are dry. The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	1
Mustard Greens	Aphids Cabbage looper Flea beetle Imported cabbageworm	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 5 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Nectarines	Aphids (Black cherry, Black peach, Green peach, Rusty plum) Japanese beetle Mites (European red, Two-spotted) Cottony peach scale Lesser peach tree borer Oriental fruit moth Plum curculio Terrapin scale	2.5 to 3.0 3.0	Full coverage spray. The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 3.0 lbs AI/A (3.0 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 9.0 lbs of malathion per acre per calendar year.	7
Oats	Aphids Cereal leaf beetle Grasshoppers Greenbugs	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	7
Okra	Aphids Japanese beetle	1.2	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.2 lbs AI/A (1.2 pts Malathion 8 Aquamul); the maximum number of applications/year is 5; and the minimum retreatment interval is 7 days. Do not apply more than a total of 6.0 lbs of malathion per acre per calendar year.	1
Onions (bulb and green)	Onion thrips Onion maggots	1.0 to 1.56 1.56	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.12 lbs of malathion per acre per calendar year.	3
Papaya	Aphids Mealybugs	1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 8; and the minimum retreatment interval is 3 days. Do not apply more than a total of 10.0 lbs of malathion per acre per calendar year.	1
Parsley	Aphids	1.0 to 1.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7
Parsnips	Aphids	1.0 to 1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	7
Passion Fruit	Fruit flies	0.75 pt + 1.0 lb partially hydrolyzed yeast protein or enzymatic yeast hydrolyzate	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 8; and the minimum retreatment interval is 7 days. Do not apply more than a total of 8.0 lbs of malathion per acre per calendar year.	3

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Peaches	Aphids (Green peach, Black cherry, Black peach, Rusty plum) Japanese beetle Mites (European red, Two-spotted) Cottony peach scale Lesser peach tree borer Oriental fruit moth Plum curculio Terrapin scale	2.5 to 3.0 3.0	Full coverage spray. The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 3.0 lbs AI/A (3.0 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 11 days. Do not apply more than a total of 9.0 lbs of malathion per acre per calendar year.	7
Peas	Aphids Pea weevil	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	3
Pecans	Aphids Mites Pecan bud moth Pecan leaf casebearer Pecan nut casebearer Pecan phylloxera	2.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 2.5 lbs AI/A (2.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 5.0 lbs of malathion per acre per calendar year.	7
Peppers	Aphids Pepper maggots	0.75 to 1.5 1.5	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 5 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	3
Peppermint Spearmint	Aphids Flea beetle - adults Leafhoppers Spider mites	0.94	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 0.94 lb AI/A (0.94 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.82 lbs of malathion per acre per calendar year.	7
Pineapples	Mealybugs	2.0	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 2.0 lbs AI/A (2.0 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 6.0 lbs of malathion per acre per calendar year.	7
Potatoes	Aphids False chinch bugs Leafhoppers Mealybugs	1.0 to 1.5	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	0
Pumpkins	Aphids Cucumber beetle Pickleworms Spider mites Thrips	1.0	Do not apply unless plants are dry. The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	1
Radishes	Aphids	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Rice	Rice leafminers Rice stink bugs	1.25	Broadcast use only over intermittently flooded areas. Application may not be made around bodies of water where fish or shellfish are grown and/or harvested commercially. The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.5 lbs of malathion per acre per calendar year.	7
Rutabagas	Aphids	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7
Rye	Aphids Cereal leaf beetles Grasshoppers Greenbugs	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	7
Salsify (including tops)	Aphids	1.0 to 1.25	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	7
Shallots	Aphids Thrips	1.0 to 1.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	3
Sorghum, Grain	Greenbugs	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	7
Spinach	Aphids	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	7
Squash	Aphids Cucumber beetles Pickleworms Spider mites Thrips	Summer: 1.75; Winter: 1.0	Do not apply unless plants are dry. **For Summer Squash**, the Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 1.75 lbs AI/A (1.75 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 5.25 lbs of malathion per acre per calendar year. **For Winter Squash**, the Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.0 lbs of malathion per acre per calendar year.	1
Strawberries	Aphids Field crickets Lygus bugs Potato leafhoppers Spider mites Spittle bugs Strawberry leafroller Strawberry root weevil Thrips Whitefly	1.0 to 2.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 2.0 lbs AI/A (2.0 pts Malathion 8 Aquamul); the maximum number of applications/year is 4; and the minimum retreatment interval is 7 days. Do not apply more than a total of 8.0 lbs of malathion per acre per calendar year.	3

Crop	Pest	Rate Pts/A	Directions	Pre-Harvest Interval (PHI) (days)
Sweet Potatoes	Leafhoppers Leafminers, morningglory	1.0 to 1.56 1.56	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 3.12 lbs of malathion per acre per calendar year.	0
Swiss Chard	Aphids	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	14
Tomatoes	Aphids Spider mites Armyworms Drosophila Fruit worms Tomato russet mites	1.0 to 1.56 1.56	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.56 lbs AI/A (1.56 pts Malathion 8 Aquamul); the maximum number of applications/year is 4; and the minimum retreatment interval is 5 days. Do not apply more than a total of 6.24 lbs of malathion per acre per calendar year.	1
Turnips	Aphids Cabbage loopers Flea beetles Imported cabbageworms	1.25	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 5 days for greens and 7 days for roots. Do not apply more than a total of 3.75 lbs of malathion per acre per calendar year.	1
Walnuts	Aphids Mites Walnut husk fly	2.5	The Restricted Entry Interval (REI) is 24 hrs. The maximum application rate is 2.5 lbs AI/A (2.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 3; and the minimum retreatment interval is 7. Do not apply more than a total of 7.5 lbs of malathion per acre per calendar year.	7
Watercress	Aphids	1.0 to 1.25	At the maximum application rate of 1.25 lbs AI/A (1.25 pts Malathion 8 Aquamul), the Restricted Entry Interval (REI) is 24 hrs. The maximum number of applications/year is 5, and the minimum application interval is 3 days; OR at the maximum application rate of 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul), the Restricted Entry Interval (REI) is 12 hrs. The maximum number of applications/year is 5, and the minimum application interval is 3 days. Do not apply more than a total of 6.25 lbs of malathion per acre per calendar year.	3
Watermelon	Aphids Cucumber beetle Leafhopper Pickleworms Spider mites	1.5	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.5 lbs AI/A (1.5 pts Malathion 8 Aquamul); the maximum number of applications/year is 4; and the minimum retreatment interval is 7 days. Do not apply more than a total of 6.0 lbs of malathion per acre per calendar year.	1
Wheat (spring & summer)	Aphids Cereal leaf beetles Grasshoppers Greenbugs	1.0	The Restricted Entry Interval (REI) is 12 hrs. The maximum application rate is 1.0 lb AI/A (1.0 pt Malathion 8 Aquamul); the maximum number of applications/year is 2; and the minimum retreatment interval is 7 days. Do not apply more than a total of 2.0 lbs of malathion per acre per calendar year.	7

OUTDOOR ORNAMENTALS

Precaution: Before treating a large number of ornamental plants with Malathion 8 Aquamul alone or as a tank mixture with any other material, make a test application on a few plants and observe 7 to 10 days prior to treating large areas to reduce the possibility of plant injury.

Crop	Rate	Pests	Comments
Ornamental Herbaceous Plants Ornamental and/or Shade Trees Ornamental Woody Shrubs	1.0 pt in 100 gals of water as a dilute spray	Aphids Euonymus scales European pine shoot moth Four-lined leaf bug Japanese beetle adults Lace scale Mealybugs Millipedes Oyster shell scale Potato leafhopper Rose leafhopper Scurfy scale Spider mites Springtails Sowbugs Tarnished plant bug Thrips Whiteflies	IMPORTANT: Avoid use on certain ferns including Boston, Maidenhair and Pteris, as well as some species of Crassula and Canaetri Juniper. For Oyster shell, Fletch, Juniper, Oak kermes and Pine needle scales, apply when scale crawlers have settled on foliage. The Restricted Entry Interval (REI) is 12 hrs. Maximum of 2 applications/year/growing cycle; 10 day minimum retreatment interval; maximum single application rate 2.5 lbs AI/100 gals.
	1.25 pts in 100 gals of water as a dilute spray	Azalea scale Bagworm Birch leafminer Boxwood leafminer Fletch scale Florida-red scale Juniper scale Magnolia scale Oak kermes Pine leaf scale Tent caterpillar	
	1.6 pts in 100 gals of water	Black scale crawler Monterey pine scale	
	2.5 pts in 100 gals of water	Pine needle scale Wax scale	
Slash Pine Pine Seed Orchards and Christmas Tree Plantations	For ground application, mix 3.2 pts of Malathion 8 Aquamul in 100 gals of water	European pine sawfly Slash pine flower thrips	Apply 6.0 pts of the mixture/tree on the smallest flowering trees. Mist blowers or airblast sprays may be used. The Restricted Entry Interval (REI) is 12 hrs. Maximum of 2 applications/year/growing cycle; 10 day minimum retreatment interval; maximum single application rate 3.2 lbs AI/100 gals.
	For air application, mix 3.2 pts of Malathion 8 Aquamul in at least 10.0 gals of water		Apply a minimum of 5.0 gals of mixture/acre. Make 2 applications, the first when female flowers are in twig bud stage, the second one week prior to maximum flower receptivity to pollen.

SMALL GRAIN STORAGE FACILITIES (Grain Elevators/Silos)

Only for use in storage facilities being prepared to store corn, wheat, rye, oats, and barley grain. For a residual wall, floor, and machinery spray in grain elevators/silos prior to loading grain, apply 5.0 pints per 25.0 gallons of water making thorough application. Before applying spray, clean grain elevators/silos thoroughly. Remove and burn all sweeping as debris. Do not apply directly to grain. REI = 12 hours. The maximum single application rate is 0.6 pound active ingredient per 1000 square feet. The maximum number of applications is 1 per storage period.

FLY CONTROL

Amount of Spray	Amount Malathion 8 Aquamul	Directions for Use
1.0 gal	1.2 fl oz	For use around the lower foundation of homes and as a spot treatment only on yards. Apply spray at rate of 1.0 gal/1000 sq ft on painted surfaces and 2.0 gals/1000 sq ft on unpainted surfaces where flies alight or congregate.
10.0 gals	12.0 fl oz	
100 gals	7.5 pts	

For Bait Sprays - add the following sugar or unsulfurized molasses/corn syrup.

Amount of Spray	Amount of Sugar	Amount of Unsulfurized Molasses/ Corn Syrup
1.0 gal	0.5 cup	4.0 fl oz
10.0 gals	2.0 lbs	26.0 fl oz
100 gals	20.0 lbs	2.0 gals

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

PESTICIDE STORAGE: Malathion 8 Aquamul should be stored in the original unopened container in a secure, dry place. Do not contaminate with other pesticides or fertilizers. The product should never be heated above 55 °C (131 °F), and should not be stored for long periods of time at a temperature in excess of 25 °C (77 °F). Store in a cool, dry, well-ventilated area. Store separately from strong alkalies and strong oxidizers. Keep container tightly closed when not in use.

PESTICIDE DISPOSAL: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying.

For containers up to 5 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

For containers greater than 5 gallons or 50 pounds: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. If not recycled, then puncture and dispose of in a sanitary landfill. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

For refillable containers: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container.

Storage & Disposal cont'd.:

Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

For help with any spill, leak, fire or exposure involving this material, call day or night CHEMTREC – 1-800-424-9300.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

BEFORE BUYING OR USING THIS PRODUCT, read the entire Directions for Use and the following Conditions of Sale and Limitation of Warranty and Liability. By buying or using this product, the buyer or user accepts the following Conditions of Sale and Limitation of Warranty and Liability, which no employee or agent of LOVELAND PRODUCTS, INC. or the seller is authorized to vary in any way.

Follow the Directions for Use of this product carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop or other plant injury, ineffectiveness, or other unintended consequences may result from such risks as weather or crop conditions, mixture with other chemicals not specifically identified in this product's label, or use of this product contrary to the label instructions, all of which are beyond the control of LOVELAND PRODUCTS, INC. and the seller. The buyer or user of this product assumes all such inherent risks.

Subject to the foregoing inherent risks, LOVELAND PRODUCTS, INC. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use when the product is used in strict accordance with such Directions for Use under normal conditions of use. EXCEPT AS WARRANTED IN THIS LABEL AND TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THIS PRODUCT IS SOLD "AS IS," AND LOVELAND PRODUCTS, INC. MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ELIGIBILITY OF THIS PRODUCT FOR ANY PARTICULAR TRADE USAGE.

IN THE UNLIKELY EVENT THAT BUYER OR USER BELIEVES THAT LOVELAND PRODUCTS, INC. HAS BREACHED A WARRANTY CONTAINED IN THIS LABEL AND TO THE EXTENT REQUIRED BY APPLICABLE LAW, BUYER OR USER MUST SEND WRITTEN NOTICE OF ITS CLAIM TO THE FOLLOWING ADDRESS: LOVELAND PRODUCTS, INC., ATTENTION: LAW DEPARTMENT, P.O. BOX 1286, GREELEY, CO 80632-1286.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE BUYER'S OR USER'S EXCLUSIVE REMEDY FOR ANY INJURY, LOSS, OR DAMAGE RESULTING FROM THE HANDLING OR USE OF THIS PRODUCT, INCLUDING BUT NOT LIMITED TO CLAIMS OF BREACH OF WARRANTY OR CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHER TORTS, SHALL BE LIMITED TO ONE OF THE FOLLOWING, AT THE ELECTION OF LOVELAND PRODUCTS, INC. OR THE SELLER: DIRECT DAMAGES NOT EXCEEDING THE PURCHASE PRICE OF THE PRODUCT OR REPLACEMENT OF THE PRODUCT. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, LOVELAND PRODUCTS, INC. AND THE SELLER SHALL NOT BE LIABLE TO THE BUYER OR USER OF THIS PRODUCT FOR ANY CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES, OR DAMAGES IN THE NATURE OF A PENALTY.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **MALATHION 8 AQUAMUL**
1.2 RECOMMENDED USE: GROUP 1B INSECTICIDE – FOR INSECT CONTROL
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity - Oral	Category 4	H302
Acute Toxicity - Dermal	Category 4	H312
Sensitization – Skin	Category 1	H317
Eye Damage/Irritation	Category 2B	H320
Acute Toxicity – Inhalation	Category 4	H332
Specific Target Organ Toxicity (Single Exposure)	Category 2	H371
Specific Target Organ Toxicity (Repeated Exposure)	Category 2	H373
Aquatic Toxicity	Category 2	H401
Combustible Liquid	Category 4	H227

2.2 Label elements

Signal word: WARNING

Hazard Statement:
H302 – Harmful if swallowed.
H312 – Harmful in contact with skin.
H317 – May cause an allergic skin reaction.
H320 – Causes eye irritation.
H332 – Harmful if inhaled.
H371 – May cause damage to organs.
H373 – May cause damage to organs through prolonged or repeated exposure.
H401 – Toxic to aquatic life.
H227 – Combustible liquid.

Precautionary Statement:
P260 – Do not breathe dust/fume/gas/mist/vapors/spray.
P262 – Do not get in eyes, on skin, or on clothing.
P264 – Wash thoroughly after handling.

(Prevention):
P270 – Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/eye protection/face protection.
P210 – Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P102 – Keep out of reach of children.

Precautionary Statement:	P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330 – Rinse mouth. P302+P312: IF ON SKIN: Call a POISON CENTER or doctor/physician if you feel unwell. P352 – Wash with soap and water. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
(Response):	P101 – If medical advice is needed, have the product container or label at hand. P362 – Take off contaminated clothing and wash before reuse. P333+P313 – If skin irritation or rash occurs: Get medical advice/attention. P337 – If eye irritation persists: Get medical advice/attention. P363 – Wash contaminated clothing before reuse. P370 – In case of fire: Use dry chemical, carbon dioxide, foam, water spray or fog to extinguish. P391 – Collect spillage.
Precautionary Statement: (Storage):	P403+P235 – Store in a well-ventilated place. Keep cool.

2.3 Other hazards
Cholinesterase inhibitor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Malathion	121-75-5	Oral tox. 4; H302 Dermal tox. 4; H312	81.80
*Other ingredients	n/a	Sens. Skin. 1; H317 Eye Dam/Irrit. 2B; H320 Inh. tox. 4; H332 STOT-SE 2; H371 STOT-RE 2; H373 Aquatic tox. 2; H401	18.20

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures
General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Eyes: Causes eye irritation.
Oral: Harmful if swallowed.
Dermal: Harmful in contact with skin.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565

Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: This product may cause cholinesterase inhibition. Atropine is antidotal. 2-PAM may be effective as an adjunct to atropine.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: Product will decompose rapidly when heated to temperatures at or over 280°F (140°C). Release of volatile, toxic compounds such as dimethyl sulfide, sulfur dioxide, carbon monoxide, and phosphorus pentoxide are possible.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: This pesticide is toxic to aquatic organisms, including fish and invertebrates. This product may contaminate water through drift of spray in wind. This product has a high potential for runoff after application. Use care when applying in or to an area which is adjacent to any body of water, and do not apply when weather conditions favor drift from target area. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. 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 for contamination of water from rainfall-runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters.
This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Product should be stored in the original unopened container in a secure dry place. Do not contaminate other pesticides or fertilizers. Product should never be heated above 55°C (131°F), and should not be stored for long periods of time at temperatures in excess of 25°C (77°F). Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Malathion	TLV	1 mg/m^3 (**IFV**: Measured as inhalable fraction and vapor)
	TLV	

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Malathion	TLV	15 mg/m^3 (Total dust), Skin

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
Acetylcholinesterase Inhibiting Pesticides	70% of individual's baseline	Cholinesterase activity in red blood cells

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.

Skin Protection: Long-sleeved shirt and long pants. Chemical-resistant gloves. Shoes plus socks.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-84A with NIOSH equipped N, R, or P class filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Mild petroleum.
ODOR THRESHOLD: No data available.
COLOR: Straw to amber-colored.
pH: 3.69 (10% v/v)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: 198.5°F/ 92.5°C (TCC).
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Soluble.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: No data available.
SPECIFIC GRAVITY (Water = 1): 1.19 g/ml
DENSITY: 9.89 lbs./gal **/** 1.19 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable
10.2 CHEMICAL STABILITY
Stable under normal temperature conditions
10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.
10.4 CONDITIONS TO AVOID
Keep away from heat or flame.
10.5 INCOMPATIBILE MATERIALS
Strong bases and oxidizers. This product can corrode iron, steel, tin plate and copper. Rapidly hydrolyzed at pH >7.0
10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Volatile, toxic compounds such as dimethyl sulfide, sulfur dioxide, carbon monoxide, and phosphorus pentoxide may be released in a fire situation.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Skin absorption. Skin contact. Inhalation.
LC_{50} (rat): > 5.1 mg/L (4 HR)
LD_{50} Oral (rat): > 550 mg/kg
LD_{50} Dermal (rat): > 2,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Mild irritant.
Eye Irritation (rabbit): Causes moderate eye irritation.
Specific Target Organ Toxicity: Eyes, skin, respiratory system, liver, blood cholinesterase, CNS, CVS, GI tract.
Aspiration: No data available.
Skin Sensitization (guinea pig): Sensitizer
Carcinogenicity: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-3 (Unclassifiable as to Carcinogenicity in Humans).
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is toxic to fish and aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Information below is based on the technical ingredient Malathion.

Ecotoxicological Data

	Species	Test Results
Malathion	Oncorhynchus mykiss	0.18 mg/L – 96-hour LC_{50}
	Daphnia magna	0.72 µg/L – 96-hour EC_{50}
	Bees	0.38 µg/bee – LD_{50} acute oral
	Bees	0.27 µg/bee – LD_{50} topical

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: Malathion is biodegradable but does not fulfill criteria for being readily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Bioconcentration potential is low (BCF 95).

12.4 MOBILITY IN SOIL

Malathion is of medium mobility in soil under normal conditions, but degrades rapidly.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: 12.5 GALLONS AND LESS: NOT REGULATED BY DOT
DOT Shipping Description: GREATER THAN 12.5 GALLONS: RQ UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (MALATHION), 9, III ERG GUIDE 171
U.S. Surface Freight Classification: INSECTICIDES, INSECT REPELLENTS, NOI, OTHER THAN POISON (NMFC 102120, CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2	Health	0 Least	2	Health
2	Flammability	1 Slight	2	Flammability
0	Instability	2 Moderate	0	Reactivity
		3 High	H	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Malathion (CAS: 121-75-5) 100 pounds.
SARA, Title III, Section 313: Malathion (CAS: 121-75-5) 81.8%.
RCRA Waste Code: Not listed.
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm..

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if swallowed, inhaled, or absorbed through skin.
Causes moderate eye irritation
Avoid contact with skin, eyes, or clothing.
Avoid breathing spray mist or vapor.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

16 OTHER INFORMATION

SDS STATUS: Section 15 revised.

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

EPA REG. NO.: 34704-474

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar
Re: EPA Special Local Need [24(c)] request to extend the use of Avipel Hopper Box (Dry) Corn Seed Treatment, ME-120002, to control depredation of sweet corn seed by grackles, black birds, and crows
Date: May 3, 2017

****

Please find enclosed the above-referenced FIFRA Section 24(c) label and supporting documents for your consideration.

The Board approved a Section 18 for Avipel Hopper Box (Dry) Corn Seed Treatment, (active ingredient anthraquinone) to control depredation of sweet corn seed by grackles, black birds, and crows on February 24, 2012. The EPA subsequently denied the Section 18, but encouraged states to pursue a 24(c) registration. The Section 24(c) was issued on April 12, 2012.

This request is to extend the use through December 31, 2022. Avipel is a non-lethal alternative to other avian control methods and according to Richard Kersbergen, University of Maine Cooperative Extension Crop Specialist, has been highly effective in reducing crop losses due to bird depredation.

The package includes the additional following documents for review:

- ME-120002 Avipel (Dry) Hopper SLN label
- Cover letter from Doug Lawrence, Product Manager, Arkion Life Sciences
- Support letter from Richard Kersbergen, Ph.D., University of Maine Cooperative Extension
- Support letter from Lauchlin Titus, AgMatters LLC
- Container labels
- SDS

Please review these materials and contact me at (207) 287-7544 if you have any questions.

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

24(c) Special Local Need Registration SLN ME 120002

(For Distribution and Use Only Within the State of Maine)

This SLN expires and must not be used or distributed after 12/31/2022

Avipel® Hopper Box (dry) Corn Seed Treatment

For Protection of Field and Sweet Corn Seed to discourage consumption by Grackles, Black Birds and Crows.

ACTIVE INGREDIENT

9, 10-Anthraquinone …… 97.1%

OTHER INGREDIENTS …… 2.9%

Total 100%

KEEP OUT OF REACH OF CHILDREN

CAUTION

NOT A PLANT FOOD INGREDIENT

Active Ingredient: 9, 10-Anthraquinone

FIRST AID	
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a Poison Control Center or Doctor for further treatment advice.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a Poison Control Center or Doctor for treatment advice.
If in eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a Poison Control Center or Doctor for treatment advice.
If swallowed:	• Call Poison Control Center or Doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the Poison Control Center or Doctor. • Do not give anything by mouth to an unconscious person.

FOR MEDICAL EMERGENCIES INVOLVING THIS PRODUCT, CALL TOLL FREE 1-800-535-5053.
HAVE THE PRODUCT CONTAINER OR LABEL AVAILABLE WHEN SEEKING TREATMENT ADVICE.

See side panel for additional precautionary statements.

MANUFACTURED BY:
ARKION® LIFE SCIENCES LLC
551 Mews Drive Suite J
New Castle, DE 19720

EPA Establishment No.: 84123-TN-001

NET CONTENTS: 16.0 Ounces DATE OF MANUFACTURE: _____

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if swallowed. Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Harmful if inhaled. Avoid breathing dust. Remove contaminated clothing and wash clothing before re-use. Causes moderate eye irritation. Avoid contact with eyes or clothing.

PERSONAL PROTECTIVE EQUIPMENT: When handling Avipel, use long-sleeved shirt and long pants, socks, shoes, chemical resistant gloves and goggles. Use a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N,R,P or HE filter.

ENVIRONMENTAL HAZARDS:
Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA. Do not contaminate water by cleaning of equipment or disposal of waste. Apply this product only as specified on this label.

DIRECTIONS FOR USE

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

I. GENERAL INFORMATION

When applied properly **Avipel** forms a bird repellent coating on corn seeds. Birds may sample treated seeds but they will avoid additional consumption. **Thorough, uniform and consistent coverage** is essential for full protection from bird depredation. Use only at the recommended labeled rate. Lower amounts may not give desired control.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Reformulation or repackaging of this product is prohibited. 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 agency responsible for pesticide regulation.

The State Department of Agriculture must be informed immediately of any adverse effects that may result from the use of this product.

This label must in the possession of the applicator during the application of this product.

RATE: Field Corn and Sweet Corn seed: Apply Avipel Hopper Box (dry) at a rate of one scoop, 2.0 ounces of product per 25 pounds of seed (1.94 ounces a.i. per 25 pounds of seed) as a dry mixture in the planter box as a seed treatment just prior to planting. **Do not make more than one (1) application per acre per season.**

MIXING INSTRUCTIONS: Always apply Avipel Hopper Box (dry) to the corn seed and mix thoroughly before additional dry products, i.e. talc or graphite is applied to the seed. For best results, pour 25 pounds of corn seed into the seed hopper and then add 2.0 ounces (one scoop) of Avipel Hopper Box (dry) and mix thoroughly with a paddle or other suitable tool dedicated to mixing this product only. For each additional 25 pounds of seed add 2.0 ounces (one scoop) of Avipel Hopper Box (dry) and mix again to ensure all corn seeds are covered. DO NOT MIX WITH BARE HANDS. Use only at the recommended rate. Lower amounts may not give desired control.

Treated seed must be adequately dyed in accordance with 21 CFR 2.25 to prevent use as a food or feed item.

Agricultural Use Restrictions

Use this product only in accordance with its labeling and Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours. "Exception: if the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated areas if there will be no contact with anything that has been treated." PPE required for early entry to treated areas that is permitted under the Worker Production Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, waterproof gloves, shoes plus socks, protective eyewear.

User Safety Recommendations: Users Should: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling the product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage and Disposal:

Pesticide Storage: Store in a sheltered location away from food or feed.

Pesticide Disposal: Improper disposal of excess pesticide is a violation of Federal law. If these wastes cannot be disposed of by use according to label instruction, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Arkion® also can be contacted for guidance on the disposal of pesticide wastes.

Container and measuring scoop Disposal: Dispose of in a sanitary landfill or incinerator or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

CONDITIONS OF SALE AND WARRANTY:

Arkion® warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label only when used in accordance with label directions under normal conditions of use. Since timing, method of application, weather and ground conditions, mixture with other chemicals, and other factors affecting the use of this product are beyond our control, no warranty is given concerning the use of this product contrary to label directions, or under conditions which are abnormal or not reasonably foreseeable.

ARKION® MAKES NO OTHER WARRANTIES EITHER EXPRESS OR IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE.

Handling, storage and use of the product by Buyer or User are beyond the control of Arkion® and Seller. Risks such as ineffectiveness or other directions will be assumed by the Buyer or User.

IN NO CASE WILL ARKION® OR SELLER BE HELD LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE HANDLING, STORAGE OR USE OF THIS PRODUCT, NOR HELD RESPONSIBLE FOR INJURY OR LOSS AS A RESULT OF THE HANDLING OR USE OF THIS PRODUCT.

The use of Avipel in agricultural applications is protected by US Patents 6,328,986; 5,885,604; 5,922,774

DL Nov. 12, 2012

Arkion
LIFE SCIENCES

551 Mews Drive, Suite J
New Castle, DE 19720
302-504-7420
Fax: 302-655-3546
www.ArkionLS.com

May 2, 2017

Ms. Mary E. Tomlinson
Pesticide Registrar/Water Quality Specialist
Maine Board of Pesticide Control
28 State House Station
Augusta, ME 04333

Subject: Avipel SLN Label extension, to control Grackles and Black Birds depredation of corn seed.
We are recommending that a full five (5) renewal period be considered to reduce any further frustration.

Dear Mary Tomlinson:

Mary, as EPA continues to review the use of Avipel for corn seed treatment, both the liquid and hopper box labels because of the change in the review from biopesticides division to registration division. Arkion anticipates a return to biopesticides division over the next 12 months where the decision to issue a section 3 label for corn seed treatment will be made.
Mr. Mark Suarez is the current product manager in EPA for our portfolio and is anticipating the renewals and issuance of new SLNs this year. Please file your labels with him at the earliest convenient time for your office. You can reach Mark directly for further information: (Suarez.mark@epa.gov.)
It is anticipated that the renewal of these labels should be for multiple years and Arkion is recommending asking for the full 5 years to reduce any further frustration. Our company appreciates fully the amount of effort you have put into this process over the years and we anticipate a final resolution to the issue in the near future.

Regards,

Doug Lawrence
Product Manager
AQ - Agriculture Products
515/231-3944

THE UNIVERSITY OF MAINE
Cooperative Extension

Putting knowledge to work with the people of Maine

992 Waterville Road, Waldo, Maine 04915 ● 1-800-287-1426 / 207-342-5971 ● Fax: 342-4229
Richard.kersbergen@maine.edu

May 3, 207

To: Mary Tomlinson, Maine Board of Pesticides Control

From: Richard Kersbergen, Extension Professor, Sustainable Dairy and Forage Systems

Re: Section 24c label for Avipel

I am writing to request a 5 year extension on the 24c for Avipel, distributed by Arkion. This product with the active ingredient 9,10-Anthraquinone, is labeled and used as a hopper box dry seed treatment to discourage consumption by birds.

Avipel has been an extremely successful product used by a majority of farmers in fields that have had serious predation by birds in corn crops. My area of expertise is forage crops for dairy farmers, so the product has been used as a seed treatment for silage corn.

A quick survey of distributers who sell this product has indicated that many producers who have tried to reduce costs by not using Avipel in the last few years have been discouraged by the loss of plants and seed, with the result of additional expense required for replanting the crop with Avipel applied to the seed. With corn seed prices increasing dramatically in the last few years, that can create serious economic hardship for producers who are already struggling with poor economic conditions in the dairy industry.

As noted earlier, Avipel is a taste deterrent and has been extremely effective. Last year, I visited a farm where I witnessed a 25 acre field with greater than 50% loss due to birds from corn seed not treated with Avipel. The field was replanted with the product and lost almost no plants. Another client I work with is an organic dairy farmer who used to grow corn silage, but has discontinued to grow it because in part, the bird predation was too severe (Avipel is not approved for use on organic farms) and alternative methods of control (balloons, flash tape and dead crows) were ineffective.

I have included a picture of some corn damage in 2016 on a field that I have been using for research at Gold Top Farm in Knox. As you can see, the row of corn pictured had 100% loss of plants and needed to be completely replanted. Not only did this add the cost of additional seed, it also reduced potential yield due to later than normal planting with a reduced value in terms of forage quality.

Avipel has become a product that is used judiciously by producers to protect their crops in fields with historical bird damage. I hope you will amend the 24c label for an additional 5 year period.

Please let me know if you have any questions.

AgMatters LLC
Lauchlin W. Titus, CPAg, CCA
1063 Main Street
Vassalboro, ME 04989
Office 207 873-2108 Cell 207 314-2655
lauchlin@agmattersllc.com
www.agmattersllc.com

April 21, 2017

Re: Avipel usage

I am a private crop consultant, working with 60 farmer clients who farm a total of 13,000 of crops in Maine. Of this acreage, 5000 acres is field corn or sweet corn. I believe 100% of my clients who grow corn (40 of the 60) use Avipel to reduce bird pulling on some, if not all, of their acreage.

Avipel works extremely well. I have a client with one field that in the past has had close to 80% of the corn kernels pulled by crows and as a result needed to be replanted. The next year, with the use of Avipel, I observed in that field individual corn kernels on the soil surface (common at the end of rows as the planter is either going into or coming out of the soil) that sat there for at least 3 weeks and the birds would not touch it. There were crows in the trees less than 50 feet from these corn kernels! I have never found a field that needed to be replanted as a result of bird pulling if Avipel was used on the seed. I would rate that at 100% effectiveness.

We have other crops that also receive significant damage from bird pulling of seed and it would certainly be helpful to have registration of the product for use on those crops as well. Specifically, pumpkins, squash and related cucurbit family crop are the ones that receive loss similar to what we see in corn. Acreage of these crops in Maine are much less than acreage of corn, but magnitude of injury is similar to untreated corn and the cost of seed and value per acre of the crop both significantly exceed those values for corn.

Lastly, I am also President of the Maine Vegetable and Small Fruit Growers Association and the Association supports continuing registration of Avipel and possible expansion of the label to other crops of concern.

Sincerely yours,

Lauchlin W. Titus

Certified Professional Agronomist

Lauchlin W. Titus

24 (c) Special Local Need Registration SLN ME-120002

(FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE)

This SLN expires and must not be used or distributed after June 30, 2017

Avipel® Hopper Box (Dry) Corn Seed Treatment

For Protection of Field and Sweet Corn Seed to discourage consumption by Grackles, Black Birds and Crows

ACTIVE INGREDIENT	
9,10- Anthraquinone	97.1%
OTHER INGREDIENTS	2.9%
Total	100%

KEEP OUT OF REACH OF CHILDREN
CAUTION

NOT A PLANT FOOD INGREDIENT
Active Ingredient: 9, 10 Anthraquinone

REFER TO PACKAGE LABEL FOR DIRECTIONS FOR USE

FOR MEDICAL EMERGENCIES INVOLVING THIS PRODUCT, CALL TOLL FREE 1-800-535-5033. HAVE THE PRODUCT CONTAINER OR LABEL AVAILABLE WHEN SEEKING TREATMENT ADVICE.

MANUFACTURED BY: ARKION LIFE SCIENCES LLC - 551 Mews Drive, Suite J - New Castle, DE 19720 - 800-468-6324

EPA Establishment No. 84123-TN-001

NET CONTENTS: 12 - 16 Ounce Canisters

Date of Manufacture: 11-30-12

24 (c) Special Local Need Registration SLN ME-120002

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EPA Establishment No. 84123-TN-001

NET CONTENTS: 12 - 16 Ounce Canisters

Date of Manufacture: 11-30-12

LOT NUMBER

24 (c) Special Local Need Registration SLN ME 120002

CONDITIONS OF SALE AND WARRANTY

Arkion® warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label only when used in accordance with label directions under normal conditions of use. Since timing, method of application, weather and ground conditions, mixture with other chemicals, and other factors affecting the use of this product are beyond our control, no warranty is given concerning the use of this product contrary to label directions, or under conditions which are abnormal or not reasonably foreseeable.

ARKION® MAKES NO OTHER WARRANTIES EITHER EXPRESS OR IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE.

Handling, storage and use of the product by Buyer or User are beyond the control of Arkion® and Seller. Risks such as ineffectiveness or other directions will be assumed by the Buyer or User.

IN NO CASE WILL ARKION® OR SELLER BE HELD LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE HANDLING, STORAGE OR USE OF THIS PRODUCT, NOR HELD RESPONSIBLE FOR INJURY OR LOSS AS A RESULT OF THE HANDLING OR USE OF THIS PRODUCT.

DIRECTIONS FOR USE

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

I. GENERAL INFORMATION

When applied properly Avipel® forms a bird repellent coating on corn seeds. Birds may sample treated seeds but they will avoid additional consumption. **Thorough, uniform and consistent coverage** is essential for full protection from bird depredation. Use only at recommended labeled rate. Lower amounts may not give desired control.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Reformulation or repackaging of this product is prohibited. 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 agency responsible for pesticide regulation.

The State Department of Agriculture must be informed immediately of any adverse effects that may result from the use of this product.

RATE: Field corn and Sweet Corn Seed: Apply Avipel Hopper Box (dry) at a rate of one scoop, 2.0 ounces of product per 25 pounds of seed (1.94 ounces a.i. per 25 pounds of seed) as a dry mixture in the planter box as a seed treatment just prior to planting. **Do not make more than one (1) application per acre per season.**

MIXING INSTRUCTIONS: Always apply Avipel Hopper Box (dry) to the seed and mix thoroughly before additional dry products, i.e. talc or graphite is applied to the seed. For best results, pour 25 pounds of corn seed into the seed hopper and then add 2.0 ounces (one scoop) of Avipel Hopper Box (dry) and mix thoroughly with a paddle or other suitable tool dedicated to mixing this product only. For each additional 25 pounds of seed add 2.0 ounces (one scoop) of Avipel Hopper Box (dry)and mix again to ensure all seeds are covered. DO NOT MIX WITH BARE HANDS. Use only at the recommended rate. Lower amounts may not give desired control. Treated seed must be adequately dyed in accordance with 21 CFR 2.25 to prevent use as a food or feed item.

This label must be in the possession of the applicator during the application of this product.

User Safety Recommendations

Users should: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if swallowed. Harmful if absorbed through the skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Harmful if inhaled. Avoid breathing dust. Remove contaminated clothing and wash clothing before re-use. Causes moderate eye irritation. Avoid contact with eyes or clothing.

PERSONAL PROTECTIVE EQUIPMENT: When handling Avipel®, use long-sleeved shirt and long pants, socks, shoes, chemical resistant gloves and goggles. Use a dust/mist filtering respirator (MSHA/NIOSH approved number prefix TC-21C, or a NIOSH approved respirator with any N,R,P or HE filter.

ENVIRONMENTAL HAZARDS: Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA. Do not contaminate water by cleaning of equipment or disposal of waste. Apply this product only as specified on this label.

II. STORAGE AND DISPOSAL

Pesticide Storage: Store in a sheltered location away from food or feed.

Pesticide Disposal: Improper disposal of excess pesticide or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instruction, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Arkion® also can be contacted for guidance on the disposal of pesticide wastes.

Container and Measuring Scoop Disposal: Dispose of in a sanitary landfill or incinerator or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Agricultural Use Restrictions

Use this product only in accordance with its labeling and Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours. "Exception: if the product is soil-injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated areas if there will be no contact with anything that has been treated." PPE required for early entry to treated areas that is permitted under the Worker Production Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, waterproof gloves, shoes plus socks, protective eye wear.

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Avipel® Hopper Box (Dry) Corn Seed Treatment

For Protection of Field and Sweet Corn Seed to discourage consumption by Grackles, Black Birds and Crows

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OTHER INGREDIENTS.....2.9%
Total 100%

KEEP OUT OF REACH OF CHILDREN
CAUTION
NOT A PLANT FOOD INGREDIENT
Active Ingredient: 9,10- Anthraquinone

FIRST AID	
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a Poison Control Center or Doctor for further treatment advice.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a Poison Control Center or Doctor for treatment advice.
If in eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a Poison Control Center or Doctor for treatment advice.
If swallowed:	• Call poison Control Center or Doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the Poison Control Center or Doctor. • Do not give anything by mouth to an unconscious person.

FOR MEDICAL EMERGENCIES INVOLVING THIS PRODUCT, CALL TOLL FREE 1-800-535-5053. HAVE THE PRODUCT CONTAINER OR LABEL AVAILABLE WHEN SEEKING TREATMENT ADVISE.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

MANUFACTURED BY:

ARKION LIFE SCIENCES, LLC - 551 MEWS DRIVE, SUITE J - NEW CASTLE, DE 19720

EPA Establishment No.: 84123-TN-001

Date of Manufacture: 11/30/12

Net Contents: 16.0 Ounces

LOT NUMBER

24 (c) Special Local Need Registration SLN ME 120002

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Pesticide Storage: Store in a sheltered location away from food or feed.

Pesticide Disposal: Improper disposal of excess pesticide or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instruction, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Arkion® also can be contacted for guidance on the disposal of pesticide wastes.

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The use of Avipel® in agricultural applications is protected by US Patents 6,328,986; 5,885,604; 5,922,774

Avipel® and Arkion® are registered trademarks of Arkion® Life Sciences LLC
551 Mews Drive, Suite J - New Castle, DE 19720 - 800-468-6324 www.Arkionls.com

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Avipel® Hopper Box (Dry) Corn Seed Treatment

For Protection of Field and Sweet Corn Seed to discourage consumption by Grackles, Black Birds and Crows

ACTIVE INGREDIENT
9,10- Anthraquinone.....97.1%
OTHER INGREDIENTS.....2.9%
Total 100%

KEEP OUT OF REACH OF CHILDREN
CAUTION
NOT A PLANT FOOD INGREDIENT
Active Ingredient: 9,10- Anthraquinone

FIRST AID

If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a Poison Control Center or Doctor for further treatment advice.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a Poison Control Center or Doctor for treatment advice.
If in eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a Poison Control Center or Doctor for treatment advice.
If swallowed:	• Call poison Control Center or Doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the Poison Control Center or Doctor. • Do not give anything by mouth to an unconscious person.

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SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

MANUFACTURED BY:

ARKION LIFE SCIENCES, LLC - 551 MEWS DRIVE, SUITE J - NEW CASTLE, DE 19720

EPA Establishment No.: 84123-TN-001

Date of Manufacture: 11/30/12

Net Contents: 16.0 Ounces

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Avipel® Dry Hopper Box

Product Code: EPA Registration No: SLN 69969-X

1.2. Intended Use of the Product

Use of the substance/mixture: For the protection of Field and Sweet Corn Seed against consumption by various bird species, including Black Birds, Crows, Pheasants and Sand Hill Cranes.

1.3. Name, Address, and Telephone of the Responsible Party

Company

Arkion® Life Sciences LLC.
551 Mews Drive Suite J
New Castle, DE 19720
302-504-7400; 800-468-6324

1.4. Emergency Telephone Number

Emergency Number : 1-800-535-5053
INFOTRAC – TOLL FREE 24 HOUR EMERGENCY TELEPHONE NUMBER

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Comb. Dust

Eye Irrit. 2B	H320
Skin Sens. 1	H317
Carc. 2	H351

Full text of H-phrases: see section 16

2.2. Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

GHS07 GHS08

Signal Word (GHS-US) : Warning

Hazard Statements (GHS-US) : May form combustible dust concentrations in air.
H317 - May cause an allergic skin reaction.
H320 - Causes eye irritation.
H351 - Suspected of causing cancer.

Precautionary Statements (GHS-US) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust, mist, vapors.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P280 - Wear eye protection, protective clothing, protective gloves.
P302+P352+P362+P364 - IF ON SKIN: Wash with plenty of water. Take off contaminated clothing and wash it before reuse.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. May form combustible dust concentrations in air.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Product Identifier	%	Classification (GHS-US)
Anthraquinone	(CAS No) 84-65-1	98	Comb. Dust Skin Sens. 1A, H317 Carc. 2, H351
Water	(CAS No) 7732-18-5	< 2	Not classified

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

First-aid Measures After Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water or soap and water for at least 15 minutes. Wash contaminated clothing before reuse. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

First-aid Measures After Ingestion: Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: May cause an allergic skin reaction. Suspected of causing cancer. Causes eye irritation.

Symptoms/Injuries After Inhalation: May cause respiratory irritation.

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction. Symptoms may include: Redness, pain, swelling, itching, burning, dryness, and dermatitis.

Symptoms/Injuries After Eye Contact: Causes eye irritation. Symptoms may include: Redness, pain, swelling, itching, burning, tearing, and blurred vision.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Suspected of causing cancer.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Combustible Dust. Dust explosion hazard in air. Supports combustion at high temperatures.

Explosion Hazard: Avoid dust clouds in combination with static electricity. Dust clouds can be explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present.

Firefighting Instructions: Use water spray or fog for cooling exposed containers. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Do not allow run-off from firefighting to enter drains or water courses. Stop leak if safe to do so.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Other Information: Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing dust. Avoid generating dust. Keep away from open flames, hot surfaces and sources of ignition. Use special care to avoid static electric charges.

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Avoid generation of dust during clean-up of spills. Contain and collect as any solid.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8. Vacuum clean-up is preferred. If sweeping is required use a dust suppressant. Use only non-sparking tools. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Precautions for Safe Handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid creating or spreading dust. Fine dust of the product is capable of dust explosion. Avoid all sources of ignition: heat, sparks, open flame. Take precautionary measures against static discharge.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Store locked up. Keep container closed when not in use. Keep/Store away from direct sunlight, and extremely high or low temperatures. Store in a sheltered location away from food or feed.

Incompatible Products: None known.

Storage Temperature: < 50 °C (122 °F) and above freezing

7.3. Specific End Use(s)

For the protection of Field and Sweet Corn Seed against consumption by various bird species, including Black Birds, Crows, Pheasants and Sand Hill Cranes.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

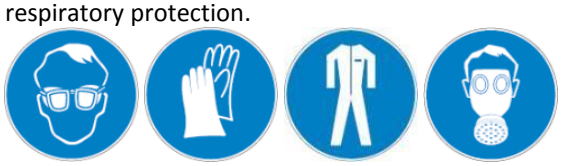
8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

8.2. Exposure Controls

Appropriate Engineering Controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation. Power equipment should be equipped with proper dust collection devices. Ensure that all electrical components/systems are in compliance with the National Electrical Code. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof equipment. Ensure all national/local regulations are observed.

Personal Protective Equipment : Protective goggles. Gloves. Protective clothing. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing : Chemically resistant materials and fabrics.

Hand Protection : Wear chemically resistant protective gloves.

Eye Protection : Chemical safety goggles.

Skin and Body Protection : Wear suitable protective clothing.

Respiratory Protection : If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Environmental Exposure Controls : Do not allow the product to be released into the environment.

Consumer Exposure Controls : Do not eat, drink or smoke during use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State : Solid

Appearance : Light Gray powder

Odor : Weak aromatic

Odor Threshold : No data available

pH : 6.5 - 8.5

Evaporation Rate : No data available

Melting Point : 284.7 °C (544.46 °F)

Freezing Point : No data available

Boiling Point : No data available

Flash Point : No data available

Auto-ignition Temperature : No data available

Decomposition Temperature : > 270 °C (> 518 °F)

Flammability (solid, gas) : No data available

Vapor Pressure : No data available

Relative Vapor Density at 20 °C : No data available

Relative Density : No data available

Solubility : Not soluble in water

Partition Coefficient: N-Octanol/Water : No data available

Viscosity : No data available

Minimum Ignition Energy : < 3 mJ

Minimum Ignition Temperature : > 500 °C (> 932 °F)

Limiting Oxygen Concentration : 9 - 10%

9.2. Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Hazardous reactions will not occur under normal conditions.

10.2. Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4. Conditions to Avoid: Direct sunlight, extremely high or low temperatures, open flames, and sources of ignition.

10.5. Incompatible Materials: None known.

10.6. Hazardous Decomposition Products: Under conditions of fire this material may produce: Carbon oxides (CO, CO_2).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Toxicological Effects

Acute Toxicity: Not classified

Avipel® Dry Hopper Box	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 2.04 mg/l

Anthraquinone (84-65-1)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 1300 mg/m³ (Exposure time: 4 h)

Water (7732-18-5)	
LD50 Oral Rat	> 90000 mg/kg

Skin Corrosion/Irritation: Not classified (Slightly irritant but not relevant for classification)

pH: 6.5 - 8.5

Serious Eye Damage/Irritation: Causes eye irritation

pH: 6.5 - 8.5

Respiratory or Skin Sensitization: May cause an allergic skin reaction.

Germ Cell Mutagenicity: Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity: Suspected of causing cancer

Anthraquinone (84-65-1)	
IARC group	2B
National Toxicology Program (NTP) Status	Evidence of Carcinogenicity.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction. Symptoms may include: Redness, pain, swelling, itching, burning, dryness, and dermatitis

Symptoms/Injuries After Eye Contact: Causes eye irritation. Symptoms may include: Redness, pain, swelling, itching, burning, tearing, and blurred vision

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects

Chronic Symptoms: Suspected of causing cancer

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Avipel® Dry Hopper Box	
LC50 Fish 1	> 190 µg/l
EC50 Daphnia 1	> 240 µg/l

Anthraquinone (84-65-1)	
LC50 Fish 1	2650 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

12.2. Persistence and Degradability

No additional information available

12.3. Bioaccumulative Potential

Anthraquinone (84-65-1)	
Log Pow	3.39

12.4. Mobility in Soil

No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Sewage Disposal Recommendations: Do not dispose of waste into sewer.

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations. If these wastes cannot be disposed of by use according to label instruction, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Arkion® also can be contacted for guidance on the disposal of pesticide wastes.

SECTION 14: TRANSPORT INFORMATION

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

Avipel® Dry Hopper Box	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
EPA FIFRA Pesticide Product Notice	This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for

	safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.
EPA FIFRA Signal Word	Caution
EPA FIFRA Hazard Statements	Harmful if swallowed. HARMFUL IF ABSORBED THROUGH SKIN. Harmful if inhaled. Moderate eye irritant.
EPA FIFRA Precautionary Statements	HAZARDOUS TO HUMANS AND DOMESTIC ANIMALS. NOT A PLANT FOOD INGREDIENT. Keep out of the reach of children. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing dust. Remove contaminated clothing and wash clothing before re-use.

Anthraquinone (84-65-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.

Water (7732-18-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2 US State Regulations

Anthraquinone (84-65-1)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Anthraquinone (84-65-1)
U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 04/01/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Irrit. 2B	Serious eye damage/eye irritation Category 2B
Skin Sens. 1	Skin sensitization Category 1
Skin Sens. 1A	Skin sensitization Category 1A
	May form combustible dust concentrations in air
H317	May cause an allergic skin reaction
H320	Causes eye irritation
H351	Suspected of causing cancer

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)

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STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

To: Board Members
From: Staff
Re: Rulemaking
Date: May 12, 2017

Based on the Board discussion at the March 31, 2017 meeting, the list of potential rulemaking activities has been reduced to the chapters listed below. See the attached documents for more details.

If the Board wants amendments to Chapter 29 regarding browntail moth to be in effect for next spring, the Chapter needs to be submitted to the Legislature at the beginning of January, 2018. A public hearing should be scheduled for the September board meeting.

Chapter		
27 Section 2(B)(4)ii	Change wording "a list of pesticide applications conducted on school grounds" to clarify that all pesticide applications must be included in log	housekeeping
27 Section 2(B)(5)	Change wording from "made in school buildings and on school grounds" to clarify that it includes the exterior of buildings	housekeeping
27 Section 3(A)	Add insect repellents to the list of exemptions	housekeeping
27 Section 3(C)	Change wording "When the Maine Center for Disease Control has identified arbovirus positive animals (including mosquitoes and ticks) in the area, powered applications for mosquito control are exempt…" to clarify that all applications are exempt not just mosquito control applications.	housekeeping
29 Section 5	Restrictions on Pesticide Applications to Control Browntail Moths Near Marine Waters	Requires discussion

HENRY JENNINGS, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING

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29 Section 6	Incorporate Interim Policy to Delegate Authority to the Staff to Approve Requests for Variance from CMR 01-026 Chapter 29 for Control of Plants that Pose a Dermal Toxicity Hazard	Incorporate policy
29 Section 6	Incorporate Interim Policy to Delegate Authority to the Staff to Approve Requests for Variance from CMR 01-026 Chapter 29 for Control of Invasive Plants Note: Currently the Board requires quite a bit of information for a variance (see policy). Removing the requirement for a variance means the Board would not receive this information, unless some requirements were added to the rule itself.	Incorporate policy Requires discussion
36	Certification and Licensing Provisions/Monitors and Spotters for Forest Insect Aerial Spray Program. Requirements were repealed in statute. Repeal entire chapter	housekeeping

Chapter 27 Section 2(B)(4)(ii)

Section 2. Requirements for All Schools

B. Each school shall appoint an IPM Coordinator who shall act as the lead person in implementing the school's Integrated Pest Management policy. The IPM Coordinator shall be responsible for coordinating pest monitoring and pesticide applications, and making sure all notice requirements as set forth in this rule are met. In addition, the IPM Coordinator shall:

(4) maintain and make available to parents, guardians and staff upon request:

ii. a list of pesticide applications conducted on school grounds, including the date, time, location, trade name of the product applied, EPA Registration number, company name (if applicable) and the name and license number of the applicator. If the product has no EPA Registration number, then a copy of the label must be included.

Discussion

Is it unclear that applications made in and to school buildings are included in 2(B)(4)(ii)?

Chapter 27 Section 2(B)(5)

Section 2. Requirements for All Schools

B. Each school shall appoint an IPM Coordinator who shall act as the lead person in implementing the school's Integrated Pest Management policy. The IPM Coordinator shall be responsible for coordinating pest monitoring and pesticide applications, and making sure all notice requirements as set forth in this rule are met. In addition, the IPM Coordinator shall:

5) authorize any pesticide application not exempted under Sections 3A(2), 3A(3), 3B, 3C, or 3D made in school buildings or on school grounds and so indicate by completing and signing an entry on the Pest Management Activity Log prior to, or on the date on which the minimum notification requirements must be implemented; and

Discussion

Is it clear that applications made to the exterior of school buildings are included in Section 2(B)(5)?

Chapter 27 Section 3(A)

Section 3. Exemptions

A. The following pesticide uses are exempt from the requirements of Sections 4 and 5 of this rule:

(1) application of ready-to-use general use pesticides by hand or with non-powered equipment to control or repel stinging or biting insects when there is an urgent need to mitigate or eliminate a pest that threatens the health or safety of a student, staff member or visitor,

(2) application of general use antimicrobial products by hand or with non-powered equipment to interior or exterior surfaces and furnishings during the course of routine cleaning procedures, and

(3) application of paints, stains or wood preservatives that are classified as general use pesticides.

Section 4. Notification

Section 5. Integrated Pest Management Techniques

Discussion

Should insect repellents be added to the list of exemptions?

Chapter 27 Section 3(C)

Section 3. Exemptions

C. When the Maine Center for Disease Control has identified arbovirus positive animals (including mosquitoes and ticks) in the area, powered applications for mosquito control are exempt from Section 4B(1) and 5C. Applicators should post the treated area as soon as practical, in a manner consistent with Section 4B(2).

Section 4. Notification

B. When school is in session, schools shall provide notice of pesticide applications in accordance with Sections 4B(1)and 4B(2). When school is not in session, notice shall be accomplished by posting of signs as described in Section 4B(2) of this rule.

(1) The school shall provide notification of each application not exempted by Section 3 performed inside a school building or on school grounds to all school staff and parents or guardians of students. Notices given shall state, at a minimum: (a) the trade name and EPA Registration number of the pesticide to be applied; (b) the approximate date and time of the application; (c) the location of the application; (d) the reasons for the application; and (e) the name and phone number of the person to whom further inquiry regarding the application may be made. These notices must be sent at least five days prior to the planned application.

Section 5. Integrated Pest Management Techniques

C. Prior to any pesticide application the following steps must be taken and recorded:

(1) monitor for pest presence or conditions conducive to a pest outbreak,
(2) identify the pest specifically,
(3) determine that the pest population exceeds acceptable safety, economic or aesthetic threshold levels, and
(4) utilize non-pesticide control measures that have been demonstrated to be practicable, effective and affordable.

Discussion

Should Section 3(C) be amended to say that powered applications for control of the identified arthropod vector are exempt, rather than powered applications for mosquito control are exempt.

Chapter 29 Section 5

Section 5. Restrictions on Pesticide Applications to Control Browntail Moths Near Marine Waters

Pesticide applications for control of browntail moths within 250 feet of the mean high tide mark adjacent to coastal waters and extending upriver or upstream to the first bridge are subject to the requirements of this section:

A. Exemptions

The prohibitions and restrictions in Section 5 do not apply to biological pesticides, to the injection of pesticides directly into the soil or shade and ornamental trees or to the application of pesticides by licensed commercial pesticide applicators using non-powered equipment.

B. Prohibitions and Restrictions

I. A person may not apply a pesticide to control browntail moths on shade or ornamental trees within 50 feet of the mean high water mark.

II. A person may not apply a pesticide to control browntail moths on shade or ornamental trees in coastal areas located between 50 and 250 feet from the mean high water mark except in accordance with this subsection.

a. Only products with active ingredients specifically approved by the Board for this purpose may be applied.

b. Applications may be performed only with a hydraulic hand-held spray gun or air-assisted sprayers.

c. Applications may be performed only in a manner in which the applicator directs the spray away from marine waters.

d. Applications may not be made when the wind is blowing toward marine waters.

e. Applications may be performed only when the wind is equal to or greater than 2 miles per hour and blowing away from marine waters.

Discussion

How does rule need to be amended to address current browntail moth situation?

Chapter 29 Section 6

Section 6. Buffer Requirement

A. No person shall make an outdoor terrestrial broadcast application of pesticides, except for applications made to control arthropod vectors of human disease or stinging insects, within twenty-five (25) feet from the mean high water mark of:

I. Any lake or pond, except ponds that are confined and retained completely upon the property of one person and do not drain into or have a surficial connection with any other waters of the State;

II. Rivers

III. Any stream depicted as a solid or broken blue line on the most recent edition of the U.S. Geological 7.5-minute series topographic map or, if not available, a 15 minute series topographic map;

IV. Estuarine and marine waters as defined under 38 M.R.S.A. §361-A (5); or

V. Wetlands, except man-made wetlands that are designed and managed for agricultural purposes, which are:

a. connected to great ponds at any time of the year; or
b. characterized by visible surface water; or
c. dominated by emergent or aquatic plants.

B. An applicator may vary from the standards imposed under Chapter 29, Section 6 (A) by obtaining a permit to do so from the Board. Permit applications shall be made on such forms as the Board provides and shall include at least the following information:

I. The name, address and telephone number of the applicant;

II. The area(s) where pesticides will be applied;

III. The type(s) of pesticides to be applied;

IV. The purpose for which the pesticide application(s) will be made;

V. The approximate application date(s);

VI. The type(s) of application equipment to be employed; and

VII. The particular reasons why the applicant seeks a variance from the requirements of this section, including a detailed description of the techniques to be employed to assure that a reasonably equivalent degree of protection of the water body will be obtained.

C. Within 30 days after a complete application is submitted, the Board or its staff shall issue a permit if it finds that the applicant will:

I. Achieve a substantially equivalent degree of protection as adherence to the requirements of this section would provide; or

II. Demonstrate an appropriate balance of risk and benefit; and

III. Will conduct the application in a manner which protects surface waters as defined in Chapter 29, section 6 (A).

The Board may place conditions on any such permit, and the applicant shall comply with such conditions. Except as required by the permit, the applicant shall undertake the application in accordance with all of the procedures described in his variance request and all other applicable legal standards. Permits issued by the Board under this section shall not be transferable or assignable except with further written approval of the Board and shall be valid only for the period specified in the permit.

The Board delegates the authority to the staff to approve requests for variance from CMR 01-026 Chapter 29, Section 6, for the control of invasive plants. “Invasive plants” may include, but are not limited to: plants listed by the Invasive Plants Atlas of New England website, http://www.eddmaps.org/ipane/ipanespecies/current_inv.htm.

The request for a variance must include a detailed description of the area, photographs showing the area and relation to water, an agreement to use low-pressure, handheld application equipment, and the spray must be directed away from the water with no drift or direct discharge to the water body or wetland. The variance must also include a multi-year control strategy, a plan for re-vegetation of the site, and demonstrate knowledge of efficacy and appropriate practices. The variance may be granted for up to a three year period, conditional upon compliance with all variance requirements.

Policy 2

The Board delegates the authority to approve requests for variance from CMR 01-026 Chapter 29, Section 6, for the control of plants that pose a dermal toxicity hazard. Those plants may include, but are not limited to:

- Wild Parsnip (Pastinaca sativa)
- Giant Hogweed (Heracleum mantegazzianum)
- Poison Ivy (Toxicodendron radicans)
- Poison Oak (Toxicodendron toxicarium)
- Poison Sumac (Toxicodendron vernix)
- Poison Hemlock (Conium maculatum)

The variance must include agreement to use low-pressure, handheld application equipment, and the spray must be directed away from the water with no drift or direct discharge to the water body or wetland.

Discussion

Unless the rule requires it, Board will not receive any kind of notice/plan for invasive control.

Chapter 36

Suggested Change

Repeal Chapter

Discussion

Requirements for monitors and spotters for forest insect aerial spray programs were repealed in statute because they are no longer necessary with the GPS equipment used by aircraft.

01 DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY

026 BOARD OF PESTICIDES CONTROL

Chapter 27: STANDARDS FOR PESTICIDE APPLICATIONS AND PUBLIC NOTIFICATION IN SCHOOLS

SUMMARY: This rule establishes procedures and standards for applying pesticides in school buildings and on school grounds. This rule also sets forth the requirements for notifying school staff, students, visitors, parents and guardians about pending pesticide applications.

Section 1. Definitions

A. **Integrated Pest Management**. For the purposes of this rule, Integrated Pest Management (IPM) means the selection, integration and implementation of pest damage prevention and control based on predicted socioeconomic and ecological consequences, including:

(1) understanding the system in which the pest exists,

(2) establishing dynamic economic or aesthetic injury thresholds and determining whether the organism or organism complex warrants control,

(3) monitoring pests and natural enemies,

(4) when needed, selecting the appropriate system of cultural, mechanical, genetic, including resistant cultivars, biological or chemical prevention techniques or controls for desired suppression, and

(5) systematically evaluating the pest management approaches utilized.

B. **School**. For the purposes of this rule, School means any public, private or tribally funded:

(1) elementary school,

(2) secondary school,

(3) kindergarten or

(4) nursery school that is part of an elementary or secondary school.

C. **School Building**. For the purposes of this rule, School Building means any structure used or occupied by students or staff of any school.

D. **School Grounds**. For the purposes of this rule, School Grounds means:

(1) land associated with a school building including playgrounds, athletic fields and agricultural fields used by students or staff of a school, and

(2) any other outdoor area used by students or staff including property owned by a municipality or a private entity that is regularly utilized for school activities by students and staff. School grounds do not include land utilized primarily for non-school activities, such as golf courses and museums.

E. **Integrated Pest Management Coordinator**. An employee of the school system or school who is knowledgeable about integrated pest management and is designated by each school to implement the school pest management policy.

F. **School Session.** For the purposes of this rule, school is considered to be in session during the school year including weekends. School is not considered to be in session during any vacation of at least one week.

Section 2. Requirements for All Schools

A. All public and private schools in the State of Maine shall adopt and implement a written policy for the application of Integrated Pest Management techniques in school buildings and on school grounds.

B. Each school shall appoint an IPM Coordinator who shall act as the lead person in implementing the school's Integrated Pest Management policy. The IPM Coordinator shall be responsible for coordinating pest monitoring and pesticide applications, and making sure all notice requirements as set forth in this rule are met. In addition, the IPM Coordinator shall:

(1) complete Board-approved IPM Coordinator overview training within one month of his/her first appointment as an IPM Coordinator and obtain Board documentation thereof;

(2) complete Board-approved IPM Coordinator comprehensive training within one year of his/her first appointment as an IPM Coordinator and obtain Board documentation thereof;

(3) obtain at least one hour of Board-approved continuing education annually;

(4) maintain and make available to parents, guardians and staff upon request:

a. the school’s IPM Policy,

b. a copy of this rule (CMR 01-026 Chapter 27),

c. a “Pest Management Activity Log,” which must be kept current. Pest management information must be kept for a minimum of two years from date of entry, and must include:

i. the specific name of the pest and the IPM steps taken, as described under Section 5C of this rule; and

ii. a list of pesticide applications conducted on school grounds, including the date, time, location, trade name of the product applied, EPA Registration number, company name (if applicable) and the name and license number of the applicator. If the product has no EPA Registration number, then a copy of the label must be included.

(5) authorize any pesticide application not exempted under Sections 3A(2), 3A(3), 3B, 3C, or 3D made in school buildings or on school grounds and so indicate by completing and signing an entry on the Pest Management Activity Log prior to, or on the date on which the minimum notification requirements must be implemented; and

(6) ensure that any applicable notification provisions required under this rule are implemented as specified.

C. By September 1, every school shall inform the Board of the identity and the contact information for the IPM Coordinator. This requirement can be fulfilled through a Board approved reporting system.

Section 3. Exemptions

A. The following pesticide uses are exempt from the requirements of Sections 4 and 5 of this rule:

(1) application of ready-to-use general use pesticides by hand or with non-powered equipment to control or repel stinging or biting insects when there is an urgent need to mitigate or eliminate a pest that threatens the health or safety of a student, staff member or visitor,

(2) application of general use antimicrobial products by hand or with non-powered equipment to interior or exterior surfaces and furnishings during the course of routine cleaning procedures, and

(3) application of paints, stains or wood preservatives that are classified as general use pesticides.

B. The following pesticide uses are exempt from the requirements of Section 4 of this rule:

(1) pesticides injected into cracks, crevices or wall voids,

(2) bait blocks, gels, pastes, granular and pelletized materials placed in areas inaccessible to students,

(3) indoor application of a pesticide with no re-entry or restricted entry interval specified on its label but entry to the treated area is restricted for at least 24 hours.

C. When the Maine Center for Disease Control has identified arbovirus positive animals (including mosquitoes and ticks) in the area, powered applications for mosquito control are exempt from Section 4B(1) and 5C. Applicators should post the treated area as soon as practical, in a manner consistent with Section 4B(2).

D. School education facilities utilized for agricultural or horticultural education, and not normally used by the general school population, such as, but not limited to, greenhouses, nursery plots or agricultural fields, are exempt from the application limitations contained in Section 5E and notification provisions contained in Section 4B(1) provided that parents, staff and students are informed about the potential for pesticide applications in such areas. The posting requirements contained in Section 4B(2) must be complied with. In addition, students entering treated areas must be trained as agricultural workers, as defined by the federal Worker Protection Standard.

Section 4. Notification

A. A notice shall be included in the school's policy manual or handbook describing the school's IPM program including that a school integrated pest management policy exists and where it may be reviewed, that pesticides may periodically be applied in school buildings and on school grounds and that applications will be noticed in accordance with Section 4B hereof. This notice shall describe how to contact the IPM Coordinator and shall also state that the school's IPM Policy, a copy of the *Standards for Pesticide Applications and Public Notification in Schools* rule (CMR 01-026 Chapter 27), and the Pest Management Activity Log, are available for review.

B. When school is in session, schools shall provide notice of pesticide applications in accordance with Sections 4B(1)and 4B(2). When school is not in session, notice shall be accomplished by posting of signs as described in Section 4B(2) of this rule.

(1) The school shall provide notification of each application not exempted by Section 3 performed inside a school building or on school grounds to all school staff and parents or guardians of students. Notices given shall state, at a minimum: (a) the trade name and EPA Registration number of the pesticide to be applied; (b) the approximate date and time of the application; (c) the location of the application; (d) the reasons for the application; and (e) the name and phone number of the person to whom further inquiry regarding the application may be made. These notices must be sent at least five days prior to the planned application.

(2) In addition to the notice provisions above, whenever pesticide applications not exempted by Section 3 are performed in a school building or on school grounds, a sign shall be posted at each point of access to the treated area and in a common area of the school at least two working days prior to the application and for at least forty-eight hours following the application. Posting of the notification signs as required by this rule satisfies the posting requirements of Chapter 28 of the Board's rules (CMR 01-026 Chapter 28).

a. The signs shall:

i. be light colored (white, beige, yellow or pink) with dark, bold letters (black, blue, red or green).

ii. bear the word CAUTION in 72 point type,

iii. bear the words PESTICIDE APPLICATION NOTICE in 30 point type or larger,

iv. state any reentry precautions from the pesticide labeling in at least 12 point type,

v. state the approximate date and time of the application in at least 12 point type, and

vi. state the name of the company or licensed applicator making the pesticide application and a contact telephone number in at least 12 point type,

b. The signs for indoor applications must:

i. be at least 8.5 inches wide by 11 inches tall,

ii. state the trade name and EPA Registration number(s) of the pesticide(s) to be applied in at least 12 point type,

iii. state the location of the application in at least 12 point type, and

iv. state the reason(s) for the application in at least 12 point type.

c. The signs for outdoor applications must:

i. be at least 5 inches wide by 4 inches tall,

ii. be made of rigid, weather-resistant material that will last at least ninety-six (96) hours when placed outdoors,

iii. bear the Board designated symbol (see appendix A), and

iv. state a date and/or time to remove the sign.

Section 5. Integrated Pest Management Techniques

A. All pest management activities shall be undertaken with the recognition that it is the policy of the State to work to find ways to use the minimum amount of pesticides needed to effectively control targeted pests in all areas of application. In all cases, applications should be conducted in a manner to minimize human risk to the maximum extent practicable using currently available technology.

B. All pest management activities should be conducted using appropriate elements of integrated pest management as described in the latest Cooperative Extension or Department of Agriculture training manuals for pest management in and/or on school property. Pest management activities should also be conducted in accordance with the Best Management Practices for Athletic Fields & School Grounds, or other applicable Best Management Practices approved by the Board.

C. Prior to any pesticide application the following steps must be taken and recorded:

(1) monitor for pest presence or conditions conducive to a pest outbreak,

(2) identify the pest specifically,

(3) determine that the pest population exceeds acceptable safety, economic or aesthetic threshold levels, and

(4) utilize non-pesticide control measures that have been demonstrated to be practicable, effective and affordable.

D. When a pesticide application is deemed necessary, the applicator must comply with all the requirements of CMR 01-026 Chapter 31–Certification and Licensing Provisions/Commercial Applicator. The applicator must also take into account the toxicity of recommended products and choose lowest risk products based on efficacy, the potential for exposure, the signal word on the pesticide label, the material safety data sheet, other toxicology data and any other label language indicating special problems such as toxicity to wildlife or likelihood of contaminating surface or ground water.

E. Indoor pesticide use must be limited to placement of baits and wall void or crack and crevice and pool and spa disinfectant treatments unless the pest threatens the health and safety of persons in the buildings as determined by the school's integrated pest management coordinator.

F. Pesticide applications must not be conducted when people are in the same room to be treated except that applicators may set out bait blocks, pastes or gels when only informed staff members are present. When space, spot, surface or fumigation applications are conducted the ventilation and air conditioning systems in the area must be shut off or the entire building must be evacuated. Applications should be planned to occur on weekends or vacations to allow maximum time for sprays to dry and vapors to dissipate.

G. Outdoor applications should be scheduled so as to allow the maximum time for sprays to dry and vapors to dissipate and shall not occur when unprotected persons are in the target area or in such proximity as to likely result in unconsenting exposure to pesticides. Applications must also be conducted in accordance with all other applicable Board rules designed for minimizing pesticide drift and posting of treated sites. Spot treatments should be considered in lieu of broadcast applications.

Section 6. Requirements for Commercial Pesticide Applicators Making Applications in School Buildings or on School Grounds

A. Prior to conducting a pesticide application not exempted in Section 3 in a school building or on school grounds, commercial pesticide applicators shall obtain written authorization from the IPM Coordinator. Authorization must be specific to each application and given no more than 10 days prior to the planned application.

B. Commercial pesticide applicators shall, within one business day of each pesticide application, provide the IPM Coordinator with a written record of the application including the date, time, location, trade name of the product applied, EPA Registration number and the name of the licensed applicator. If the product has no EPA Registration number then the applicator will provide a copy of the label.

C. Commercial pesticide applicators shall inform the IPM Coordinator about any pest monitoring activity and results. If it is acceptable to the IPM Coordinator, this may be achieved by recording them in the Pest Management Activity Log.

STATUTORY AUTHORITY: 7 M.R.S.A. §§ 601-625 and 22 M.R.S.A. §§ 1471-A-X

EFFECTIVE DATE:
August 30, 2003, filing 2002-408 accepted October 24, 2002.

AMENDED:
July 5, 2005 – filing 2005-266
March 4, 2007 – Section 3(C), filing 2007-67
August 29, 2013 – filing 2013-188 (Final adoption, major substantive)

Appendix A

Board Designated Symbol for Posting Outdoor Pesticide Applications to School Grounds

01 DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY

026 BOARD OF PESTICIDES CONTROL

Chapter 29: STANDARDS FOR WATER QUALITY PROTECTION

SUMMARY: These regulations establish standards for protecting surface water. This chapter establishes a fifty-foot setback from surface water for mixing and loading of pesticides, sets forth requirements for securing containers on sprayers and cleaning up spills occurring within the setback zone, establishes restrictions on pesticide applications to control browntail moths near marine waters and requires an untreated 25-foot buffer zone for outdoor terrestrial broadcast pesticide applications near waters of the State.

Section 1. Protecting Waters of the State during Pesticide Mixing and Loading Operations

A. No person shall mix or load any pesticides or fill a sprayer or mix tank within fifty (50) feet from the high water mark of any surface waters of the State as defined in 38 M.R.S.A. §361-A(7).

B. No person shall use a pump that pumps pesticide concentrate or formulation or any hose that has been in contact with pesticide solution to draw liquid from any surface waters.

C. All pesticide pumping systems that come in contact with any surface waters shall be equipped with an anti-siphoning device.

Section 2. Securing Pesticide Product Containers and Mix Tanks on Sprayers, Nurse Vehicles and Other Support Vehicles during Transportation

No person shall transport any pesticide unless it is secured so as to prevent release of pesticides onto the vehicle or from the vehicle. All tanks, liquid containers, cartons and bags must be securely held so they may not shift and become punctured or spilled.

Section 3. Cleaning up Pesticide Spills within Setback Zone in Section 1

Any person who spills a pesticide within fifty (50) feet from the high water mark of any surface water shall take immediate steps to recover the pesticide by the most efficient means available and remove all contaminated soil to prevent water contamination.

Section 4. Exemptions

The following persons are exempt from Section 1(A) regarding mixing and loading within fifty (50) feet of the high water mark of any surface water:

A. Applicators with a variance approved by staff for an impervious mixing/loading pad with containment features. Applications for a variance must be submitted to the Board on or before December 31, 1999;

B. Applicators using chemigation equipment specified on labels to draw water from their tail-water ponds;

C. Commercial applicators using small individually packaged concentrates to mix no more than five (5) gallons for use in non powered equipment; and

D. Commercial applicators making aquatic applications from boats and barges.

Section 5. Restrictions on Pesticide Applications to Control Browntail Moths Near Marine Waters

Pesticide applications for control of browntail moths within 250 feet of the mean high tide mark adjacent to coastal waters and extending upriver or upstream to the first bridge are subject to the requirements of this section:

A. **Exemptions**

The prohibitions and restrictions in Section 5 do not apply to biological pesticides, to the injection of pesticides directly into the soil or shade and ornamental trees or to the application of pesticides by licensed commercial pesticide applicators using non-powered equipment.

B. **Prohibitions and Restrictions**

I. A person may not apply a pesticide to control browntail moths on shade or ornamental trees within 50 feet of the mean high water mark.

II. A person may not apply a pesticide to control browntail moths on shade or ornamental trees in coastal areas located between 50 and 250 feet from the mean high water mark except in accordance with this subsection.

a. Only products with active ingredients specifically approved by the Board for this purpose may be applied.

b. Applications may be performed only with a hydraulic hand-held spray gun or air-assisted sprayers.

c. Applications may be performed only in a manner in which the applicator directs the spray away from marine waters.

d. Applications may not be made when the wind is blowing toward marine waters.

e. Applications may be performed only when the wind is equal to or greater than 2 miles per hour and blowing away from marine waters.

Section 6. Buffer Requirement

A. No person shall make an outdoor terrestrial broadcast application of pesticides, except for applications made to control arthropod vectors of human disease or stinging insects, within twenty-five (25) feet from the mean high water mark of:

I. Any lake or pond, except ponds that are confined and retained completely upon the property of one person and do not drain into or have a surficial connection with any other waters of the State;

II. Rivers

III. Any stream depicted as a solid or broken blue line on the most recent edition of the U.S. Geological 7.5-minute series topographic map or, if not available, a 15-minute series topographic map;

IV. Estuarine and marine waters as defined under 38 M.R.S.A. §361-A (5); or

V. Wetlands, except man-made wetlands that are designed and managed for agricultural purposes, which are:

a. connected to great ponds at any time of the year; or

b. characterized by visible surface water; or

c. dominated by emergent or aquatic plants.

B. An applicator may vary from the standards imposed under Chapter 29, Section 6 (A) by obtaining a permit to do so from the Board. Permit applications shall be made on such forms as the Board provides and shall include at least the following information:

I. The name, address and telephone number of the applicant;

II. The area(s) where pesticides will be applied;

III. The type(s) of pesticides to be applied;

IV. The purpose for which the pesticide application(s) will be made;

V. The approximate application date(s);

VI. The type(s) of application equipment to be employed; and

VII. The particular reasons why the applicant seeks a variance from the requirements of this section, including a detailed description of the techniques to be employed to assure that a reasonably equivalent degree of protection of the water body will be obtained.

C. Within 30 days after a complete application is submitted, the Board or its staff shall issue a permit if it finds that the applicant will:

I. Achieve a substantially equivalent degree of protection as adherence to the requirements of this section would provide; or

II. Demonstrate an appropriate balance of risk and benefit; and

III. Will conduct the application in a manner which protects surface waters as defined in Chapter 29, section 6 (A).

The Board may place conditions on any such permit, and the applicant shall comply with such conditions. Except as required by the permit, the applicant shall undertake the application in accordance with all of the procedures described in his variance request and all other applicable legal standards. Permits issued by the Board under this section shall not be transferable or assignable except with further written approval of the Board and shall be valid only for the period specified in the permit.

STATUTORY AUTHORITY: 7 M.R.S.A. §§ 601-625 and 22 M.R.S.A. §§ 1471-A-X.

EFFECTIVE DATE:
April 14, 1999

AMENDED:
February 3, 2008 – filing 2008-35 (except that the major substantive language of Section 6, which was undergoing legislative review)
May 1, 2008 - filing 2008-154, including Section 6's final adoption

CORRECTIONS:
February, 2014 – agency names, formatting

PAUL R LEPAGE
GOVERNOR

STATE OF MAINE
MAINE DEPARTMENT OF AGRICULTURE, FOOD & RURAL RESOURCES
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0028

WALTER E WHITCOMB
COMMISSIONER

HENRY S. JENNINGS
DIRECTOR

MAINE BOARD OF PESTICIDES CONTROL INTERIM POLICY TO DELEGATE AUTHORITY TO THE STAFF TO APPROVE REQUESTS FOR VARIANCE FROM CMR 01-026 CHAPTER 29 FOR CONTROL OF PLANTS THAT POSE A DERMAL TOXICITY HAZARD

Adopted November 18, 2011

BACKGROUND

In September 1995, the Board delegated the authority to approve repeated requests for variance from the sensitive area identification requirements of CMR 01-026 Chapter 22. Since that time, the Board delegated similar authority for certain variance requests for broadcast pesticide applications within the 25-foot untreated buffer zone required by CMR 01-026 Chapter 29.

In Chapter 29, applications to control arthropod vectors of human disease and stinging insects are exempted, but applications to control vegetation that causes public health issues are not.

Recently, a variance request was submitted for control of poison ivy. There was urgency to the request, since it involved an infestation that blocked the landowner's only access to the waterfront. However, due to the timing, the request had to wait five weeks to be considered at the next Board meeting. The Board granted the variance and asked the staff to develop a policy to allow the staff to approve similar requests in the future with an emphasis on Best Management Practices (BMPs). For BMP information, applicants can be directed to the Board's *GotPests?* website, where there are seven fact sheets that provide excellent management information.

The staff recommends the following interim policy:

POLICY

The Board delegates the authority to approve requests for variance from CMR 01-026 Chapter 29, Section 6, for the control of plants that pose a dermal toxicity hazard. Those plants may include, but are not limited to:

- Wild Parsnip (*Pastinaca sativa*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Poison Ivy (*Toxicodendron radicans*)
- Poison Oak (*Toxicodendron toxicarium*)
- Poison Sumac (*Toxicodendron vernix*)
- Poison Hemlock (*Conium maculatum*)

The variance must include agreement to use low-pressure, handheld application equipment, and the spray must be directed away from the water with no drift or direct discharge to the water body or wetland.

PAUL R LEPAGE
GOVERNOR

STATE OF MAINE
MAINE DEPARTMENT OF AGRICULTURE, FOOD & RURAL RESOURCES
BOARD OF PESTICIDES CONTROL
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WALTER E WHITCOMB
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HENRY S. JENNINGS
DIRECTOR

MAINE BOARD OF PESTICIDES CONTROL INTERIM POLICY TO DELEGATE AUTHORITY TO THE STAFF TO APPROVE REQUESTS FOR VARIANCE FROM CMR 01-026 CHAPTER 29 FOR CONTROL OF INVASIVE PLANTS

Adopted December 13, 2013

BACKGROUND

In September 1995, the Board delegated the authority to approve repeated requests for variance from the sensitive area identification requirements of CMR 01-026 Chapter 22. Since that time, the Board delegated similar authority for certain variance requests for broadcast pesticide applications within the 25-foot untreated buffer zone required by CMR 01-026 Chapter 29.

On November 18, 2011, an interim policy was approved by the Board to permit staff to approve Chapter 29 requests for variances to control vegetation that pose a dermal toxicity hazard. However, no policy exempts applications to control invasive vegetation.

Several requests for variances to control invasive vegetation within twenty-five feet of surface water have recently been received and granted by the Board. Invasive plants are a common problem near surface water, involve an increasing variety of species, are difficult to eradicate, and easily re-establish. Because management is complex and requires a multi-year approach the Board directed the staff to develop a policy that allows the staff to approve multi-year variance requests provided that the request:

- includes specific pesticide use strategies designed to minimize contamination of surface water
- incorporates a long term control plan that includes re-vegetation of the site and consideration of appropriate best management practices (BMPs) specific to the target invasive species.

For BMP information and fact sheets, applicants can be directed to the Board's *GotPests?* website, http://www.maine.gov/dacf/php/gotpests/index.html.

POLICY

The Board delegates the authority to the staff to approve requests for variance from CMR 01-026 Chapter 29, Section 6, for the control of invasive plants. "Invasive plants" may include, but are not limited to: plants listed by the Invasive Plants Atlas of New England website, http://www.eddmaps.org/ipane/ipanespecies/current_inv.htm.

The request for a variance must include a detailed description of the area, photographs showing the area and relation to water, an agreement to use low-pressure, handheld application equipment, and the spray must be directed away from the water with no drift or direct discharge to the water body or wetland. The variance must also include a multi-year control strategy, a plan for re-vegetation of the site, and demonstrate knowledge of efficacy and appropriate practices. The variance may be granted for up to a three year period, conditional upon compliance with all variance requirements.

Ronald C. Lemin, Jr.
Northeast Vegetation Sales Consultant
291 Lincoln Street
Bangor, Maine 04401
207-944-6160 (m)
207-945-3737 (f)

April 30, 2017

Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333

Dear Board Chair,

As a commercial applicator in both aerial forestry and invasive plant management in the State of Maine, I am asking the Board for clarification on the definition of "**Emerged Wetland Plants**" as specified in Chapter 29, Section 6.A.V.c. If emerged wetland species are present, the site is defined as a "Wetland" and any broadcast application requires a 25-foot buffer. In both forestry and invasive plant management, the labelled products we use, allow for treatment to seasonably dry wetlands, sites having temporary surface waters, equipment ruts, and other depressions caused by management activities (See enclosed labels for Oust XP, EPA reg. No. 432-1552, page 4 and Arsenal Applicator's Concentrate, EPA Reg. No. 214-299, page 4). Often these sites may contain "emerged wetland species" such as, cattails, purple loosestrife, phragmites, sedges, etc. These species often continue to grow when surface waters are no longer present, and can exist on seasonably dry wetland sites, dry road ditches, and skidder ruts.

There is a current movement in Maine's aerial softwood release and site preparation programs to flag and mark these areas defined above since the State of Maine's regulations are stricter than those found on the label. This is leading to an extremely expensive endeavor to mark and flag all skidder ruts, and seasonable dry wetland on a forestry site prior to any aerial operation is undertaken. The understanding is that these areas listed above as permissible on the labels are classified as wetlands in Maine's Chapter 29 regulations.

Our hope as both forest landowners and applicators is to be able to follow the label specifications and not the stricter implications as specified in Chapter 29. Significant wetlands and sensitive areas are appropriately buffered and mapped as specified in the MBPC suggested BMP's for aerial application (enclosed).

I have also enclosed a few pictures of the types of areas we are worrying about during our annual aerial herbicide release and site preparation programs in Maine. I look forward to discussing this issue with you further at the Maine Board of Pesticides Control May meeting. Thank you for your time and consideration.

Sincerely,

Ronald C. Lemin, Jr.

Enclosures (3)

Cattails growing in seasonably dry wet area. This would be defined as a Wetland by Chapter 29. Applicator would need to buffer 25 feet for broadcast application.

Example of a depression created from a harvesting or logging operation. Notice beginning of cattail growth. This would also need to be buffered by 25 feet as a wetland defined by Chapter 29.

b. Applications may be performed only with a hydraulic hand-held spray gun or air-assisted sprayers.

c. Applications may be performed only in a manner in which the applicator directs the spray away from marine waters.

d. Applications may not be made when the wind is blowing toward marine waters.

e. Applications may be performed only when the wind is equal to or greater than 2 miles per hour and blowing away from marine waters.

CHAPTER 29

Section 6. Buffer Requirement

A. No person shall make an outdoor terrestrial broadcast application of pesticides, except for applications made to control arthropod vectors of human disease or stinging insects, within twenty-five (25) feet from the mean high water mark of:

I. Any lake or pond, except ponds that are confined and retained completely upon the property of one person and do not drain into or have a surficial connection with any other waters of the State;

II. Rivers

III. Any stream depicted as a solid or broken blue line on the most recent edition of the U.S. Geological 7.5-minute series topographic map or, if not available, a 15minute series topographic map;

IV. Estuarine and marine waters as defined under 38 M.R.S.A. §361-A (5); or

V. Wetlands, except man-made wetlands that are designed and managed for agricultural purposes, which are:

a. connected to great ponds at any time of the year; or

b. characterized by visible surface water; or

c. dominated by emergent or aquatic plants.

B. An applicator may vary from the standards imposed under Chapter 29, Section 6 (A) by obtaining a permit to do so from the Board. Permit applications shall be made on such forms as the Board provides and shall include at least the following information:

Page 4
OUST XP LABEL

any requirements specific to your State or Tribe, consult the agency in your State responsible for pesticide regulation.

PRODUCT INFORMATION

Oust® XP Herbicide is a dispersible granule that is mixed in water and applied as a spray or impregnated on dry, bulk fertilizer. Oust® XP Herbicide controls many annual and perennial grasses and broadleaf weeds in forestry and noncrop sites.

Oust® XP Herbicide may be used for general weed control on terrestrial noncrop sites and for selective weed control in certain types of unimproved turf grasses on these same sites. Oust® XP Herbicide may also be used for selective weed control in forest site preparation and in the release of certain conifers and hardwoods. Oust® XP Herbicide can be tank mixed with other herbicides registered for use in forestry and noncrop sites; when tank mixing, use the most restrictive limitations from the labeling of both products.

When applied as spray, Oust® XP Herbicide controls weeds by both preemergence and postemergence activity. When applied on dry fertilizer, Oust® XP Herbicide controls weeds by preemergence activity. When applied as a spray, the best results are obtained when the application is made before the early stages of weed growth before weeds develop an established root system. When applied on dry fertilizer, the best results are obtained when the application is made before weed emergence. The best results are obtained when the application is made before or during the early stages of weed growth before weeds develop an established root system. Moisture is required to move Oust® XP Herbicide into the root zone of weeds for preemergence control.

This product may be applied on forestry and non-agricultural sites that contain areas of temporary surface water caused by collection of water between planting beds, in equipment ruts, or in other depressions created by management activities. It is permissible to treat intermittently flooded low lying sites, seasonal dry flood plains and transitional areas between upland and lowland sites when no water is present. It is also permissible to treat marshes, swamps and bogs after water has receded, as well as seasonally dry flood deltas. DO NOT make applications to natural or man-made bodies of water such as lakes, reservoirs, ponds, streams and canals.

A drift control agent may be used at the manufacturer's listed rate in the application of Oust® XP Herbicide.

Oust® XP Herbicide is noncorrosive, nonflammable, nonvolatile and does not freeze.

For best postemergence results, apply Oust® XP Herbicide to young, actively growing weeds. The use rate depends upon the weed species, weed size at application, and soil texture. The degree and duration of control may depend on the following:

- weed spectrum and infestation intensity
- weed size at application
- environmental conditions at and following treatment
- soil pH, soil moisture, and soil organic matter

PAGE 4 ARSENAL AC LABEL

STORAGE AND DISPOSAL *(continued)*

Container Handling *(continued)*

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

IMPORTANT

DO NOT use on food or feed crops. **DO NOT** use on Christmas trees. **DO NOT** treat irrigation ditches, or water used for crop irrigation or for domestic uses. Keep from contact with fertilizers, insecticides, fungicides, and seeds to prevent unintentional exposure of desirable vegetation to **Arsenal® herbicide Applicators Concentrate**. **DO NOT** apply or drain or flush equipment on or near sensitive desirable plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. **DO NOT** side trim desirable vegetation with this product. Prevent drift of spray to desirable plants.

Clean application equipment after using this product by thoroughly flushing with water.

GENERAL INFORMATION

Arsenal herbicide Applicators Concentrate is a surfactant-free aqueous solution to be mixed in water and generally applied as a postemergence spray for control of most annual and perennial grasses, broadleaf weeds, vines and brambles, and hardwood brush and trees for forestry site preparation and release of conifers from woody and herbaceous competition.

Arsenal herbicide Applicators Concentrate may be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see **CONIFER RELEASE TREATMENTS**). **Arsenal herbicide Applicators Concentrate** may also be mixed in water and used for stump and cut-stem treatment for control of unwanted woody vegetation. **Arsenal herbicide Applicators Concentrate** may be applied to control undesirable woody vegetation along forest roads that are contiguous with the treated forestry area.

Arsenal herbicide Applicators Concentrate is also recommended for the control of undesirable vegetation along nonirrigation ditchbanks and for the establishment and maintenance of wildlife openings, except in the state of California. See use directions for **STUMP AND CUT-STEM TREATMENTS, HERBACEOUS WEED CONTROL**, and **USE OF ARSENAL HERBICIDE APPLICATORS CONCENTRATE FOR SPOT TREATMENT OF UNDESIRABLE HARDWOOD VEGETATION**.

Arsenal herbicide Applicators Concentrate may be applied on forestry sites that contain areas of temporary surface water caused by the collection of water between planting beds, in equipment ruts, or in other depressions created by forest management activities, except in the states of California and New York. It is permissible to treat drainage ditches, intermittent drainage, intermittently flooded low-lying sites, seasonally dry flood plains, and transitional areas between upland and lowland sites when no water is present, except in the states of California and New York. Only the edge of drainage ditches can be treated for drainage ditches that contain water. It is also permissible to treat marshes, swamps, and bogs after water has receded, as well as seasonally dry flood deltas, except in the states of California and New York. **DO NOT** make applications to natural or man-made bodies of water such as lakes, reservoirs, ponds, streams, rivers and canals.

SYMPTOMOLOGY

Arsenal herbicide Applicators Concentrate is readily absorbed through foliage and roots and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis first appears in the youngest leaf tissue. In perennials, the herbicide is translocated into the roots, thus preventing most resprouting. Chlorosis and tissue necrosis may not be apparent in some plant species for several weeks after application. Woody plants, brush, and trees normally **DO NOT** display the full extent of herbicide control until several months following application.

MIXING AND APPLICATION INSTRUCTIONS

MANAGING OFF-TARGET MOVEMENT

The following information is provided as general guidance for managing off-target movement. Specific use recommendations for **Arsenal herbicide Applicators Concentrate** may differ depending on the application technique used and the vegetation management objective.
Spray Drift: Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-related and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas,

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

To: Board of Pesticides Control Members
From: Megan Patterson, Manager of Pesticide Programs
RE: Licensing and certification interpretation/policy for training of WPS workers/handlers by Agricultural Basic applicators
Date: May 3, 2017

****

In 2015, EPA published significant revisions of the Worker Protection Standard (WPS) rules. These revisions restricted the qualification to serve as a trainer of WPS defined workers and handlers to certified applicators. EPA reserves the term "certified" for only those applicators qualified to purchase and apply restricted use pesticides. This reasoning would only allow Maine Private Applicators of Restricted Use Pesticides, Commercial Master Applicators and Commercial Master Operators to train WPS workers and handlers.

In Maine, Private Applicators of General Use Pesticides (agricultural basic applicators) are not allowed to purchase or apply restricted use pesticides. However, completion of the necessary licensing examination—the agricultural core—would, by federal standards, qualify agricultural basic applicators to be considered "certified" and thus able to purchase and apply restricted use pesticides.

In June 2016, Board staff submitted a WPS equivalency request to EPA Headquarters in an attempt to rectify this inadvertent penalty on agricultural basic applicators. The request assessed Maine's exam content and examination procedure required for agricultural basic applicators and argued that given federal requirements for certification, Maine's agricultural basic applicators should be considered certified and thus able to train WPS defined workers and handlers. After consideration of the equivalency request, EPA Headquarters communicated via EPA Region1 that an equivalency was not necessary and Maine could determine how to proceed with allowing agricultural basic applicators to train WPS workers and handlers.

We request that the Board provide approval or disapproval of the staff proposal to consider Private Applicators of General Use Pesticides (agricultural basic applicators) as equivalent to Private Applicators of Restricted Use Pesticides for the purpose of training WPS defined workers and handlers.

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

Subject: **State of Maine Worker Protection Standard Equivalency Request**
40 Code of Federal Regulations Chapter I §170.609 *Equivalency requests*.

Dear Ms. Fitz, Messrs. Keaney and Pont:

The Maine Department of Agriculture, Conservation & Forestry, Board of Pesticides Control is the State Lead Agency that regulates pesticides and is responsible for implementation and enforcement of the Worker Protection Standard.

Maine requests an equivalency determination for authority to recognize the Maine Private Applicator of General Use Pesticides in lieu of the United States Environmental Protection Agency regulation 40 CFR 170.401(c)(4) and 40 CFR 170.501(c)(4).

Introduction

Maine has similar requirements for both Private Applicators of General Use Pesticides and Private Applicators of Restricted Use Pesticides. Maine Private Applicators of Restricted Use Pesticides are required to complete closed book core and commodity exams. Private Applicators of General Use Pesticides are required to complete the same closed book core exam, but no commodity exam. Even with this lesser requirement, the Maine Private Applicator of General Use Pesticides licensing and certification procedure exceeds the federal standards for certification of private applicators as detailed in 40 CFR 171.5(a). The ways in which Maine certification exceeds the requirements listed in 40 CFR 171.5(a) are outlined below and provided in detail in section (2) of this document:

- Core exam
  - Is closed book
  - Requires a minimum score of 80
  - Contains 100 questions which cover all of the competency categories listed in 40 CFR 171.5(a)
  - Contains 10 questions related to the restricted use pesticide label for Gramoxone Max, EPA Registration No. 100-1074.
  - Addresses the difference between Restricted Use Pesticides and General Use Pesticides
- Recertification credits
  - 3 credits must be obtained over the 3 year certification period

For these reasons, Maine is requesting an equivalency determination to recognize Maine Private Applicators of General Use Pesticides as equivalent to Private applicators of Restricted Use Pesticides (40 CFR 171.5(a)) in their qualification to provide Worker Protection Standard Training for Workers (§170.401(c)(4)) and Handlers (§170.501(c)(4)) without additional training as stipulated under (§170.401(c)(4)(ii)) and (§170.501(c)(4)(ii)) respectively.

A comparison table comparing the federal regulation with the state rule is included with this correspondence.

The following is a response to the specific items listed in §170.609 *Equivalency requests:*

(1) Identification of the provision(s) of this part for which the State or Tribe is requesting regulatory equivalency:

§170.401(c)(4) *Training Requirements for Workers*
§170.501(c)(4) *Training Requirements for Handlers*

(2) Appropriate documentation establishing that the pertinent State or Tribal worker protection provision(s) provides environmental and human health protection that meets or exceeds the protections provided by the identified provision(s) in this part.

The current Maine Department of Agriculture, Conservation and Forestry Board of Pesticides Control Certification and Licensing Provisions Private Applicators of General Use Pesticides meets 40 CFR Part 170.401(c)(4) and 40 CFR 171.5(a)

Detailed below, are the depth and breadth of Maine's exam procedure, the exam topics, and the associated recertification criteria.

Competency Standards for Certification—Private Applicator of General Use Pesticides

No person shall be certified as a private applicator of general-use pesticides unless the person has fulfilled requirements demonstrating knowledge of pest problems and pest-control practices, including, as a minimum, the ability to recognize common pests and the damage they cause, to understand the pesticide label and to apply pesticides in accordance with label instructions and warnings.

Also required shall be knowledge of current methodology and technology for the control of pesticide drift to non-target areas, the proper meteorological conditions for the application of pesticides and the potential adverse effect of pesticides on plants, animal or humans.

Any person seeking to be certified as a private applicator of general-use pesticides must pass a written core exam. The exam shall be closed book. Applicants shall not be allowed to bring any books, papers, calculators or electronically stored data into the examining room. Pencils and work sheets will be provided and all papers shall be collected at the end of the exam period.

An applicant must achieve a passing score of 80 percent on the core exam.

An applicant who fails the core exam may not retake that examination prior to 6 days after the date of such failed examination. If an applicant fails again the applicant must wait 6 more days before retaking the exam again.

Any applicant who violates any of the rules pertaining to examinations shall wait a minimum of 60 days before retesting.

Standards for Recertification—Private Applicator of General Use Pesticides

A valid certification may be recertified by accumulating recertification credits.

Any person with a current valid certification may renew that certification by accumulating three recertification credits during the 3 year certification period.

Recertification credits will be available through Board-approved meetings including, but not limited to, University or industry and trade organization seminars or workshops and approved home study courses where pest management topics are included.

Recertification topics include but are not limited to:
Applicable laws and regulations;
Environmental hazards;
Calibration and new application techniques;
Label review;
Pesticide risk and applicator safety;
Pesticide storage and disposal;
Pest identification, biology and management;
Integrated Pest Management;
Pesticide fate and drift management;
Risk communication; and
Public relations.

One credit shall be assigned for each one hour of presentation on appropriate topics.

An individual who conducts a meeting for which the Board does assign recertification credits will be eligible for two credits for each one hour of presentation on appropriate topics.

For in-state programs, each participant will complete an on-site process to verify attendance at each program for which credit is allowed. For electronic, correspondence or out-of-state programs, applicators must notify the Board about attendance and send a registration receipt or other proof of completion or attendance and a copy of the agenda or syllabus of the training provided. The agenda or syllabus must show the length of each presentation and describe what was covered.

A person who fails to accumulate the necessary credits will have to take the most current exam required for initial certification.

Maine Worker Protection Standard Equivalency Request

Attached, are the Maine regulations that apply to this request.

(3) Identification of any additional modifications to existing State or Tribal regulations that would be necessary in order to provide environmental and human health protection that meets or exceeds the similar provisions of this part, and an estimated timetable for the State or Tribe to effect these changes.

None

(4) The expected economic impact of requiring compliance with the requirement(s) of this part in comparison with compliance with the State or Tribal requirement(s), and an explanation of why it is important that employers subject to the State or Tribal authority comply with the State or Tribal requirement(s) in lieu of similar provision(s) in this part.

The State of Maine developed the "Ag Basic" license to provide increased awareness of pesticide safety. Chapter 33 of the Maine Board of Pesticides Control. Chapter 33 is summarized as:

"*These regulations describe the requirements for certification and licensing of private applicators using general-use pesticides to produce plants or plant products intended for human consumption as food, where the person applying the pesticides or the employer of the person applying the pesticides derives $1,000 or more in annual gross income from the sale of those commodities.*"

The effective date was December 26, 2011. The Board developed a time table to ensure there was sufficient notice and time for those impacted to obtain the study materials and to take the closed book exam. To date 511 applicators have taken the exam and have obtained their license. The Maine Board of Pesticides Control has provided approximately 15 educational training sessions across the state.

The Ag Basic license was developed based on the profile of the Maine agricultural community.

Based on USDA NASS Maine data, the number of farms has increased, from 8,136 in 2007; to 8,173 in 2012; to 8,200 in 2015. USDA NASS data reports in 2012, some 5,214 farms used 1 or more pesticides to control: insects, weeds, nematodes, or diseases in addition to growth regulators, which is counted separately. The number of registered RUPs continues to decrease, however, the biopesticides in addition to conventional-- yet more selective-- chemicals are increasing.

In 2012, there were 457 USDA Certified Organic farms in Maine and 154 USDA Organic Certified Exempt. However, "organic" does not mean there are no pesticides used—and label directions do not apply. The State of Maine registers 25B products, so there is a need to ensure these products are used properly. The Ag Basic License has raised pesticide safety awareness for organic producers—who typically participate in zero to few sessions about pesticide application, pesticide safety, worker protection, use and care of PPE, etc.

At minimum, the 511 applicators licensed as Private Applicators of General Use Pesticides will need to attend two—one for 2017 and another for the 2018 changes—Worker Protection Standard Train-the-Trainer courses resulting in lost work time of at least 4088 hours. Based on Bureau of Labor Statics estimates of mean hourly wage for farming, fishing, and forestry occupations—this is a loss of more than $51,000 in wages.

(5) The signature of the designated representative of the State or Tribal agency responsible for pesticide enforcement.

If you have questions in regard to this correspondence and attachments please do not hesitate to contact me at:

Megan L. Patterson 6/29/16

Megan Patterson
(207)287-8804
megan.l.patterson@maine.gov

You may also contact, Henry Jennings, the Director of this office, at:

(207)287-7543
henry.jennings@maine.gov

Table: Federal/State Regulation Comparison			
Topic	**Federal Regulation**	**State Rule**	**Comment**
Training	§170.401(c)(4) *Training Programs Workers* *The person who conducts the training must meet one of the following criteria:* *(i) Be designated as a trainer of certified applicators, handlers or workers by EPA or the State or Tribal agency responsible for pesticide enforcement.* *(ii) Have completed an EPA-approved pesticide safety train-the-trainer program for trainers of workers.* *(iii) Be currently certified as an applicator of restricted use pesticides under part 171 of this chapter.* §170.501(c)(4) *Training Programs Handlers* *The person who conducts the training must have one of the following qualifications:* *(i) Be designated as a trainer of certified applicators or pesticide handlers by EPA or the State or Tribal agency responsible for pesticide enforcement.* *(ii) Have completed an EPA-approved pesticide safety train-the-trainer program for trainers of workers.* *(iii) Be currently certified as an applicator of restricted use pesticides under part 171 of this chapter.*	Intentionally blank.	Maine has no rules pertaining to the Worker Protection Standard or training for workers and handlers. See below for certification and licensing rules that pertain to certification criteria for private applicators of general use pesticides.

Table: Federal/State Regulation Comparison continued			
Topic	**Federal Regulation**	**State Rule**	**Comment**
Certification	*§171.5 Standards for certification of private applicators* ***(a)*** *Competence in the use and handling of pesticides by a private applicator will be determined by procedures set forth below. State standards must conform and be at least equal to those prescribed herein. As a minimum requirement for certification, a private applicator must show that he possesses a practical knowledge of the pest problems and pest control practices associated with his agricultural operations; proper storage, use, handling and disposal of the pesticides and containers; and his related legal responsibility. This practical knowledge includes ability to:* ***(1)*** *Recognize common pests to be controlled and damage caused by them.* ***(2)*** *Read and understand the label and labeling information—including the common name of pesticides he applied; pest(s) to be controlled, timing and methods of application; safety precautions; any pre-harvest or re-entry restrictions; and any specific disposal procedures.* ***(3)*** *Apply pesticides in accordance with label instructions and warnings, including the ability to prepare the proper concentration of pesticide to be used under particular circumstances taking into account such factors as area to be covered, speed at which application equipment will be driven, and the quantity*	***Title 22, Section 1471-D*** *2. Certification required, private applicators. No private applicator shall use or supervise the use of any limited or restricted use pesticide without prior certification from the board, provided, that a competent person who is not certified may use such a pesticide under the direct supervision of a certified applicator.* *2-D. Certification required; private applicator of general use pesticides for food production. A private applicator of general use pesticides may not use or supervise the use of general use pesticides for food production without prior certification from the board, except that a competent person who is not certified may use such a pesticide under the direct supervision of a certified applicator. Additional certification under this section is not required for a person certified as a commercial applicator or a private applicator under subsection 1 or 2, respectively.* ***BPC Chapter 33, Section 1*** *Competency Standards for Certification—Private Applicator of General Use Pesticides (Core exam)* *A. No person shall be certified as a private applicator of general-use pesticides unless the person has fulfilled requirements demonstrating knowledge of pest problems and pest-control practices, including, as a minimum, the ability to*	Maine certification competency requirements for private applicators of general use pesticides are equivalent to federal competency requirements for private applicators.

	dispersed in a given period of operation. ***(4)*** *Recognize local environmental situations that must be considered during application to avoid contamination.* ***(5)*** *Recognize poisoning symptoms and procedures to follow in case of a pesticide accident.* ***(b)*** *Such competence of each private applicator shall be verified by the responsible State agency through the administration of a private applicator certification system which ensures that the private applicator is competent, based upon the standards set forth above, to use the restricted use pesticides under limitations of applicable State and Federal laws and regulations. A certification system shall employ a written or oral testing procedure, or such other equivalent system as may be approved as part of a State plan.*	*recognize common pests and the damage they cause, to understand the pesticide label and to apply pesticides in accordance with label instructions and warnings.* *B. Also required shall be knowledge of current methodology and technology for the control of pesticide drift to non-target areas, the proper meteorological conditions for the application of pesticides and the potential adverse effect of pesticides on plants, animals or humans.* *ME Complete Pesticide Rules Webpage: http://www.maine.gov/dacf/php/pesticides/laws.shtml*	

Proposed Administrative Consent Agreement
Background Summary

Subject: Benjamin Goodall
Goodall Enterprises DBA NaturaLawn of America
121A Target Industrial Circle
Bangor, Maine 04401

Date of Incident(s): June 8, 2016

Background Narrative: The Board received a call on June 9, 2016, alleging that Goodall Enterprises DBA NaturaLawn of America made an unauthorized pesticide application to a residential lawn in Rockport.

The homeowner contacted the company branch manager by phone and a meeting time was arranged for a consultation at her home about an insect problem on her lawn. However, a company applicator arrived at the homeowner's property before the agreed upon meeting time and made an insecticide application to her lawn when she was not there.

A Board inspector conducted a follow-up inspection with both the branch manager and the company applicator. The inspector learned that the branch manager instructed the applicator to make the application to the lawn. The branch manager said there was a miscommunication between him and the homeowner.

Board regulations require that an applicator obtain prior authorization from the property owner before making a pesticide application to their property.

Summary of Violation(s):

CMR 01-026 Chapter 20 Section 6(D)2 No person may apply a pesticide to a property of another unless prior authorization for the pesticide application has been obtained from the owner, manager or legal occupant of that property. The term "legal occupant" includes tenants of rented property.

Rationale for Settlement: The staff compared the violation to similar cases settled by the Board.

Attachments: Proposed Consent Agreement

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

In the Matter of: Goodall Enterprises DBA NaturaLawn of America 121A Target Industrial Circle Bangor, Maine 04401	))))	ADMINISTRATIVE CONSENT AGREEMENT AND FINDINGS OF FACT

This Agreement by and between Goodall Enterprises DBA NaturaLawn of America (hereinafter called the "Company") and the State of Maine Board of Pesticides Control (hereinafter called the "Board") is entered into pursuant to 22 M.R.S. §1471-M (2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1. That the Company provides lawn care services and has the firm license number SCF 15261 issued by the Board pursuant to 22 M.R.S. § 1471-D(1)(B).

2. That on June 9, 2016, Joanne Cook called the Board to report that the Company made an unauthorized pesticide application to her lawn at 20 Ledgewood Drive in Rockport on June 8, 2016.

3. That Cook stated that she scheduled a consultation with the Company for two PM on June 8, 2016, to discuss options about an ant problem. The applicator arrived a one PM when Cook was not home and made an unauthorized pesticide application.

4. That in response to the call in paragraph two, a Board inspector conducted a follow-up inspection with Erin Smith, a licensed pesticide applicator with the Company, on June 10, 2016. Bill Moody the Company branch manager was also present.

5. That from the inspection described in paragraph four, it was determined that Moody phoned Smith and instructed her to apply DeltaGard G to Cook's lawn on June 8, 2016, and Smith made the application.

6. That during the inspection described in paragraph three, Moody told the inspector there was miscommunication between he and Cook and he thought she wanted the application done.

7. That during the phone call described in paragraph two, Cook said she had spoken to the Company branch manager but never authorized a pesticide application.

8. That during the inspection in paragraph four the Company could not document that they had authorization to make the June 8, 2016, pesticide application to Cook's lawn.

9. That CMR 01-026 Chapter 20 Section ~~6(B)~~6(D)2 requires prior ~~consent~~ authorization from the property owner before a person can apply pesticides to ~~the property of another~~their property.

10. That the Company did not have Cook's ~~consent~~ authorization for the June 8, 2016, application of pesticide to her property.

11. That the circumstances described in paragraphs one through ten constitute a violation of CMR 01-026 Chapter 20 Section ~~6(B)~~6(D)2.

12. That the Board has regulatory authority over the activities described herein.

13. That the Company expressly waives:
    A. Notice of or opportunity for hearing;

    B. Any and all further procedural steps before the Board; and

    C. The making of any further findings of fact before the Board.

14. That this Agreement shall not become effective unless and until the Board accepts it.

That in consideration for the release by the Board of the cause of action which the Board has against the Company resulting from the violation referred to in paragraph eleven, the Company agrees to pay a penalty to the State of Maine in the sum of $500. (Please make checks payable to Treasurer, State of Maine).

IN WITNESS WHEREOF, the parties have executed this Agreement of two pages.

GOODALL ENTERPRISES DBA NATURALAWN OF AMERICA

By: _____ Date: _____

Type or Print Name: _____

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
Henry Jennings, Director

APPROVED:

By: _____ Date: _____
Mark Randlett, Assistant Attorney General

Proposed Administrative Consent Agreement
Background Summary

Subject: Matt Ten Eyck
Salmon Falls Resort and Golf Club LLC
PO Box 240
Hollis Center, Maine 04042

Date of Incident(s): Two occasions in June of 2016

Background Narrative: On June 23, 2016, an inspector conducted a routine records and operations inspection at Salmon Falls Resort and Golf Club LLC in Hollis.

The inspector determined that an employee at the facility made two fungicide applications to the golf course in June of 2016.

The regulations require that any person making a pesticide application that is a custom application, as defined under 22 M.R.S. § 1471-C(5-A), must be a certified commercial applicator or under the direct supervision of a certified applicator in accordance with 22 M.R.S. § 1471-D(1)(A) and CMR 01-026 Chapter 31 Section 1(A)III.

No one at Salmon Falls Resort and Golf Club was certified or licensed as a commercial pesticide applicator at the time the pesticide applications were made.

Summary of Violation(s):

Any person making a pesticide application that is a custom application, as defined under 22 M.R.S. § 1471-C(5-A), must be a certified commercial applicator or under the direct supervision of a certified applicator in accordance with 22 M.R.S. § 1471-D(1)(A) and CMR 01-026 Chapter 31 Section 1(A) III.

Rationale for Settlement: The staff compared the violation to similar cases settled by the Board.

Attachments: Proposed Consent Agreement

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION, AND FORESTRY
BOARD OF PESTICIDES CONTROL

Salmon Falls Resort & Golf Club LLC)
PO Box 240)
Hollis Center, ME 04042)

ADMINISTRATIVE CONSENT AGREEMENT
AND
FINDINGS OF FACT

This Agreement, by and between Salmon Falls Resort & Golf Club LLC (hereinafter called the "Company") and the State of Maine Board of Pesticides Control (hereinafter called the "Board"), is entered into pursuant to 22 M.R.S.§1471-M (2)(D) and in accordance with the Enforcement Protocol amended by the Board on June 3, 1998.

The parties to this Agreement agree as follows:

1. That the Company operates a golf course in Hollis Maine.

2. That the golf course is considered open to use by the public in accordance with 22 M.R.S. § 1471-C(5-A).

3. That the use of any pesticide in an area open to use by the public constitutes a commercial pesticide application in accordance with 22 M.R.S. § 1471-C(5).

4. That commercial pesticide applications can only be made or supervised by licensed commercial applicators pursuant to CMR 01-026 Chapter 31, Section 1(A) and (D) and 22 M.R.S.§ 1471-D(1)(A).

5. That each company that employs commercial applicators must employ at least one commercial master applicator as required by CMR 01-026 Chapter 31, Section 1(D).

6. That on June 23, 2016, a Board inspector conducted a records and operations inspection at the company. From that inspection it was determined that Matt Ten Eyck, a Company employee, made two pesticide applications to the golf course in June of 2016.

7. That neither Ten Eyck nor any other employee of the company was licensed as a commercial applicator or commercial master applicator at the time the pesticide applications described in paragraph six were made.

8. That the circumstances described in paragraphs one through seven constitute violations of CMR 01-026 Chapter 31, Section 1(A) and (D) and of 22 M.R.S.§ 1471-D(1)(A).

9. That the Board has regulatory authority over the activities described herein.

10. That the Company expressly waives:

    a. Notice of or opportunity for hearing;

    b. Any and all further procedural steps before the Board; and

    c. The making of any further findings of fact before the Board;

11. That this Agreement shall not become effective unless and until the Board accepts it.

12. That, in consideration for the release by the Board of the causes of action which the Board has or may have against the Company resulting from the violation referenced in paragraph eight, the Company agrees to pay to the State of Maine the sum of $400.00.

(Please make checks payable to Treasurer, State of Maine).

IN WITNESS WHEREOF, the parties have executed this Agreement of two pages.

SALMON FALLS RESORT & GOLF CLUB LLC
By: _____ Date: _____

Type or Print Name: _____

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
Henry Jennings, Director

APPROVED

By: _____ Date: _____
Mark Randlett, Assistant Attorney General

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
RE: Label language interpretation/policy for FIFRA EXEMPT (25b) Pesticides
Date: May 3, 2017

****

In 1996, EPA exempted minimum risk pesticides from federal regulation under FIFRA 152.25(f). These products are pesticides, but do not require registration at the federal (EPA) level. They are not tested for safety or efficacy, are not subjected to any regulatory review, and reports to the EPA of any adverse reactions resulting from their use are not required. Labeling of these pesticides has become increasingly problematic, particularly with regard to skin-applied repellents and lawn and garden pesticides.

The Pesticide Control Act of 1975 has not been revised to reflect the new reality of minimum risk pesticides. A few states have established, by statute or policy, specific minimum labeling requirements for these pesticides. In general these align with the accepted minimum EPA labeling standards. An informal coalition of eight states, of which Maine is a leading member, has agreed on a set of these minimum labeling standards. Some of the states have statutory support for the enforcement of all the standards, but Maine is not one of those.

Companies take advantage of the vagueness in the Code of Federal Regulations and inconsistency among state pesticide registration programs to avoid commonly accepted labeling standards. Typically this includes unsubstantiated claims promoting the "safety" of their products, the omission of an appropriate signal word ("Caution" is the lowest-risk signal word) and the Child Hazard Statement ("Keep Out of Reach of Children," also known as the "KOOROC" statement). For pesticides for which federal labeling is required, these statements must be prominent on the front of the label, grouped together, and set off from other text or graphic content. Some registrants try to meet these requirements by placing these statements inconspicuously among other text on the back of the product label or in associated labeling materials. We do not believe that this is sufficiently protective, especially given the intense demand among some consumers for "safe" control or repellent materials. These products are pesticides. Their use is not without risk, and we believe that the labels and labeling should accurately reflect that fact, even for this lower-risk category of products.

Title 7 §605 and §607 are silent on specific labeling language related to minimum risk pesticides because this class did not exist when the law was written. Because these sections address pesticides in general, they have been interpreted to also apply to minimum risk pesticides. A label without a signal word and KOOROC statement has been considered to be misbranded under §605(2)(B-1) "*Lack of certain information. As applied to any pesticide means that: The label does not contain a*

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

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warning or caution statement that may be necessary and that, if complied with, together with any requirements imposed under FIFRA, Section 3(d), would be adequate to protect health and the environment;" Due to a lack of clarity, companies are strongly encouraged to add these components, but registrations have not been withheld if the company fails to comply.

We request that the Board provide definitive guidance allowing us to require the minimum protective language of "caution" and the KOOROC statement, as described above, for all pesticide products registered in Maine. We suggest language such as the following to accomplish this goal:

> "*the Board requires that all pesticides, including products classified as low-risk, generally recognized as safe, 25(b), or any other materials for which pesticidal claims are made, to have at a minimum the signal word 'CAUTION' and the statement "Keep Out of the Reach of Children" prominently displayed on the front of the label, grouped together, and with sufficient prominence relative to other front panel text and graphic material to ensure that they will not be overlooked under customary conditions of purchase and use as per the guidance set forth in 40 CFR 156.60(b)."*

Report to the Joint Standing Committee on Agriculture, Conservation and Forestry 128th Maine State Legislature

Pursuant to 7 M.R.S. § 607(6), Grants Funded, Adequacy of the Product Registration Fee

Submitted by the
Maine Board of Pesticides Control
February 15, 2017

INTRODUCTION

7 M.R.S. § 607(6) requires the Maine Board of Pesticides Control (BPC) to monitor revenue and expenditures in the Pesticide Control Fund and to provide an annual report to the joint standing committee of the Legislature having jurisdiction over agriculture, conservation and forestry by February 15. The report must detail any grants provided by the BPC and include a recommendation about whether the pesticide product registration fee is adequate to fund the operation of the BPC and related programs, and to fund the annual grants outlined under 7 M.R.S. § 607(6).

SUMMARY OF GRANTS PROVIDED AND ADEQUACY OF THE FEE FOR ALL PURPOSES

During 2016, the BPC provided the following grants:

- The annual legislature transfer to the University of Maine Cooperative Extension of $135,000 pursuant to Title 7 Section 607 (6)
- The annual grant to the University of Maine Cooperative Extension of $65,000 for pesticide education
- A $50,000 grant to the Maine CDC for mosquito borne disease surveillance pursuant to Title 7 Section 607 (6)
- An ongoing grant to the Maine Migrant Health Program for $3,675 for providing pesticide safety training to migrant farm workers

CURRENT HEALTH OF THE PESTICIDES CONTROL FUND

During calendar year 2016, expenditures from the Pesticides Control Fund exceeded revenues by approximately $700,000. The BPC has been conserving funds for a few years to fund an ambitious software development effort that will provide an online self-service application that will allow the public to apply for exams, licenses and product registrations, submit reports, track continuing education credits and otherwise manage company personnel that interact with the BPC. These expenditures together with costs for the final phases of the project will essentially exhaust the cash reserves to the recommended contingency buffer (10%). No further grants are advisable during 2017.

ADEQUACY OF THE PESTICIDE PRODUCT REGISTRATION FEE

Maine's pesticide product registration fee is slightly higher than the national average while the population and market potential are below the national average. The fee appears adequate to fund Department programs and the two grant areas outlined in Title 7 Section 607 (6). No change in the fee is recommended at this time.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

Date: May 2, 2017
To: Board Members
From: Staff
Subject: Review of Continued Board Homeowner Education Efforts

The Board has continued to discuss various ideas and approaches for improving education of homeowners on the use of Integrated Pest Management and the proper use of pesticides. Staff has provided oral updates to the Board at each Board meeting since the August 19, 2016 Board meeting. The following list details the outreach projects staff are currently or will be implementing as of the last Board meeting:

Presentations

- Presentation at live-streamed Rockport Conservation Committee
- Presentation at 2017 Maine Land Trust Conference
- Presentation of four Master Gardener pesticide talks
- Invited adult education talk in Lincoln—garden pest management /beneficial insect protection

Social Media

- GovDelivery- BPC staff have been posting bulletins on BPC GovDelivery page under the following topics:
  - BPC Board Meeting
  - Pesticide Continuing Education Credit Calendar
  - Yard, Garden and Home
- Utilizing Facebook page for outreach

Articles/Publications

- Working on new version of GUP dealer sign

Website content

- Review of Board websites is underway—HealthyMaineLawns and GotPests—repairing broken links and updating content

Other

- Obsolete Pesticide Collection Program—contacted DEP Waste Management official, Sandy Moody, who is holding training for transfer station operators. Obsolete pesticide brochures and advertisement posters (see attached documents) were provided to Moody for dissemination to training attendees.

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BOARD OF PESTICIDES CONTROL
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PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

MAINE BOARD OF PESTICIDES CONTROL POLICY—DEFINITION OF BIOLOGICAL PESTICIDE AS IT RELATES TO CHAPTER 29 SECTION 5

Revised March 31, 2017

BACKGROUND

The Board discussed questions that arose during the spring of 2016 relative to interpretation of the term "biological pesticide" as used in Section 5 of Chapter 29, which regulates pesticide applications for control of browntail moth adjacent to marine waters. The staff pointed out that when this rule was originally written, it contemplated that "biological pesticide" would primarily include strains of *Bacillus thuringiensis* and similar microbial pesticides. With the recent increase in browntail moth populations, questions have arisen about other active ingredients which are derived from organisms. Staff indicated that the term "biological pesticide" is now commonly perceived to include pesticide active ingredients consisting of single cell organisms or products derived from organisms. At the January 11, 2017 meeting, the Board reviewed various options and adopted an interpretation of the term "biological pesticide," which was subsequently amended at the March 31, 2017 meeting.

POLICY

For the purposes of Chapter 29, Section 5, the term "biological pesticide" includes any microbial pesticide that contains the microorganism and byproducts normally associated with the organism, as approved by the Board.

As of March 31, 2017 the Board has approved:

Spinosad
Bacillus thuringiensis variety *kurstaki*
Azadirachtin

HENRY JENNINGS, DIRECTOR
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From: Heather Spalding
Sent: Thursday, April 27, 2017 3:27 PM
To: Pesticides; Jim Dill
Subject: Article for next BPC packet

Dear Representative Dill and members of the Maine Board of Pesticides Control,

I read this article and thought you would be interested in it.

https://thewalrus.ca/big-agro-on-campus/

I hadn't heard about the Irving project with the University of Maine and was intrigued. I would like to know more. I thought you might wish to include the article in the packet for the upcoming meeting on May 12.

Thank you very much,

Heather Spalding
Deputy Director
Maine Organic Farmers and Gardeners Association

FEATURE (HTTPS://THEWALRUS.CA/CATEGORY/LONG-READS/FEATURE/)

Big Agro on Campus

(https://thewalrus.ca/)

Universities claim industry-funded research on chemical and pesticide safety is scientifically sound. Not everybody is convinced

BY BRUCE LIVESEY (HTTPS://THEWALRUS.CA/AUTHOR/BRUCE-LIVESEY/)
ILLUSTRATION BY KATIE CAREY (HTTPS://THEWALRUS.CA/AUTHOR/KATIE-CAREY/)
APR. 11, 2017

In early 2014, New Brunswick's Department of Natural Resources (DNR) was facing a crisis. Rod Cumberland, former chief deer biologist for the province, had been waging a media and letter-writing campaign to draw attention to an unfolding disaster in the province's forests—namely, the collapse of the white-tail deer population, which had dropped to 70,000 from a peak of 286,000 in 1985.

Cumberland was convinced that he had identified the culprit: glyphosate, the world's most popular weed killer, which is sold primarily by Monsanto, an agrochemical multinational. Glyphosate is sprayed on 15,000 hectares of New Brunswick's Crown land each year, and Cumberland believes the herbicide is wiping out the animal's food source. "Each white-tail eats about a ton of food a year," he explains, "so we were basically removing enough food to feed 32,000 of them annually."

Cumberland's charges placed the province in a bind. The government uses glyphosate to stunt the growth of hardwood trees—which the deer feed on—making it easier for the forest industry to grow softwood trees that can be turned into lumber. The chemical therefore sits at the very centre of one of the province's most important industries. Internal emails from 2014 show senior provincial DNR bureaucrats scrambling to respond to Cumberland, at one point sharing damage-control suggestions from J. D. Irving Ltd., New Brunswick's largest forestry company. Eventually, they hit upon a solution: find scientists who could defend glyphosate to the public.

Among the experts they enlisted was Len Ritter, a toxicologist from the University of Guelph well known for his claims that the dangers of pesticides and herbicides are misrepresented. Ritter was touted as one of three go-to scientists on a pro-glyphosate website sponsored by the

New Brunswick government and forest companies. Last year, he and the others were sent to cities and towns across both New Brunswick and Nova Scotia, where they made presentations and answered questions from local residents about the provincial herbicide-spraying programs. At the public forums, the scientists argued that the decline in deer had been caused by harsh winters and coyotes. (Cumberland counters that deer populations in Maine and Quebec face the same climate challenges and predators, yet haven't plunged as dramatically.)

By this time, Cumberland's criticisms had helped spur a popular no-spraying movement, which was attracting thousands of petition signatures and setting up protests. His focus had shifted to glyphosate's health and environmental impact. In March 2015, the International Agency for Research on Cancer (IARC)—an advisory arm of the World Health Organization (WHO)—concluded that the chemical is a "probable carcinogen."

One month after the IARC issued its decision, Cumberland sent a list of studies to the New Brunswick government that detailed the herbicide's dangers. In December 2015, he received a lengthy response from Ritter, who argued that the studies weren't supported by reviews carried out by "major regulatory authorities," and that glyphosate did not pose an unacceptable risk to human health. "I would advise that much of my attached commentary is not simply my personal opinion but rather is drawn from the recent [federal government] and EU reviews of the safety of glyphosate," he wrote. Ritter copied the deputy minister of natural resources on the email, which was sent from his University of Guelph account.

A Fellow of the Academy of Toxicological Sciences, Ritter is one of Canada's leading experts on the effects of pesticides and herbicides on humans, and was awarded a medal by the WHO in 2006, in recognition of his contributions as an advisor to the organization.

But Ritter also has a history of championing some of the industry's most controversial agrochemical products. Critics such as Green Party leader Elizabeth May have accused him of having supported a dioxin-laced pesticide linked to Agent Orange while he was at Health Canada in the early 1980s—a pesticide whose sales, by 1979, had been suspended in the United States. In 1994, while on unpaid leave from his position as the director of what is now Health Canada's Veterinary Drugs Directorate, Ritter testified during a parliamentary comittee hearing that bovine growth hormone, which boosts milk production, was "99.9 percent" safe (the government eventually decided against allowing its use in Canada). In 2015, the Prince Edward Island Potato Board flew him to Charlottetown to address fears that the pesticides being used by farmers were a cancer threat. Environmental activist Sharon Labchuk called him a "pesticide proponent" in a letter to PEI's *Journal Pioneer*. "Ritter," she claimed, "says pesticides are too difficult for the average Canadian to understand, that we should quit worrying and leave it up to the experts."

Industry-funded scientists often demand an incredibly high standard of proof before they will accept something as toxic.

The fact that Ritter is a professor emeritus of environmental toxicology at the University of Guelph comes as no surprise to his detractors. Located in the city of Guelph, one hour west of Toronto, the university —nicknamed "Moo U"—is Canada's top agricultural school and home to more than 20,000 students. Opened in 1874 on a farm provided by the province of Ontario, the university remains focused on supplying graduates for the agricultural, farming, forestry, and veterinary industries. This, inevitably, has meant that the school often teams up with the companies that dominate those sectors, forming partnerships that have paid dividends for the institution, which today claims to attract more research dollars per capita than any other comprehensive university in Canada. Indeed, as part of a push to make academic research more relevant in the marketplace, Ontario's agriculture

ministry—headquartered on campus—has ramped up its co-sponsorship of private sector–funded projects. Scientists are graded on the amount of outside investment they secure.

Academic critics warn that the arrangement is a Faustian bargain. Faculty members, they say, are being recruited by agrochemical giants to undermine criticisms levelled at their products, and therefore help keep potentially dangerous chemicals on the market.

About 3 billion kilograms of pesticides are sprayed across the globe annually; these chemicals constitute a $60 billion (US) market, and that number is expected to increase by one-third by 2019. In Canada, 100 million kilograms of pesticides were sold in 2014—up nearly 15 percent from five years earlier. Given the widespread use of these chemicals, it's critical that agrochemical companies prove to regulatory agencies that their products are safe.

Every year, Monsanto, Bayer CropScience, BASF, and DuPont collectively spend hundreds of thousands of dollars at the University of Guelph on research projects largely designed to examine the environmental and health impacts of their compounds. The university has done its best to welcome this money. It has built a sprawling six-acre research park on its grounds that has housed offices for Monsanto, Syngenta, and dozens of other private-sector agricultural and farming corporations. Numerous companies—including Bayer—also sponsor research chairs.

These initiatives have resulted in one of the world's largest concentrations of expertise and facilities dedicated to crop research and development—a Silicon Valley of agriculture responsible for breakthrough after breakthrough: edible nanomaterials that extend the colour and flavour of food; bioplastics derived from ingredients such as beans, soy, and wheat straw; DNA barcoding that helps distinguish more than 400,000 species of land plants. Jay Bradshaw, president of Syngenta Canada, may well have been speaking for the entire industry when, in a 2014 report that was prepared to drum up investment in the university, he was quoted as saying: "There is a phenomenal network of agrifood hubs of activity—of formal networks and informal networks—to be able to tap into. That's a huge benefit for us."

Part of that benefit, for Syngenta and others, appears to involve access to a number of Guelph researchers who are capable of effectively challenging claims that herbicides and pesticides are a threat to people, wildlife, and the environment. Ritter, for one, has long argued that pesticides generally pose no threat if applied properly, because they are present in such small concentrations in food and drinking water. "What government regulators do with any potentially toxic substance is control the exposure in order to control the risk," he tells me over the phone. "The algorithm is based on a definition of 'reasonable probability of no risk, no harm,' even if exposure takes place every day for the rest of your life."

One of the most widely used of those "potentially toxic substances" is glyphosate. Since its invention in the 1970s by Monsanto, nearly 8.6 billion kilograms of it have been applied around the world. An active ingredient in the company's blockbuster product, Roundup, it also appears in weed-killer lines from Dow and Syngenta. By 2014, the global market for it was $5.5 billion (US).

While both the US Environmental Protection Agency (EPA) and the European Food Safety Authority (EFSA) have declared the use of glyphosate to be safe, recent research has been setting off alarm bells. Two years before the IARC described the herbicide as a "probable

carcinogen," researchers at the Massachusetts Institute of Technology claimed that it could cause obesity, dementia, autism, and Parkinson's, among other chronic diseases.

But the controversy surrounding glyphosate has also become—thanks in no small part to the interventions of University of Guelph scientists—a case study in how difficult it is to establish any fixed opinion on the safety of such compounds. In 2001, with funding from the US National Science Foundation, Rick Relyea, a community ecologist then at the University of Pittsburgh, began a series of experiments looking into the effects of pesticides on amphibians. The sensitivity of that animal class to environmental changes makes it a useful indicator of ecosystem health. When Relyea introduced glyphosate to tadpoles, the results were dramatic. "The day after applying the pesticides," he later wrote, "we found very high tadpole mortality in the tanks treated with Roundup." In 2005, he published his findings in the journal *Ecological Applications*.

Soon afterwards, the journal published a lengthy letter from a group of scientists, including University of Guelph researchers Dean G. Thompson, then an adjunct professor there, and Keith Solomon. Now seventy-two, Solomon has published hundreds of papers, joined numerous international toxicology organizations and committees, and supervised dozens of graduate students. Both Solomon and Thompson have also conducted research funded by Monsanto.

The letter challenged Relyea's findings, claiming, among other things, that the tadpoles had been exposed to a chemical concentration greater than typical application rates, and that his experiment had not tested real-world scenarios: because glyphosate is not sprayed directly over water, they argued, it poses a limited threat to aquatic life.

In his response, published in the same issue, Relyea insisted that he had applied a manufacturer-recommended concentration of the chemical, and suggested that his critics' letter had contradicted the research findings of one of its own authors: years earlier, Thompson had asserted that wetlands are inadvertently affected by the over-spraying of glyphosates. In a later article, Relyea highlighted Solomon and Thompson's ties to Monsanto: "Accepting research money from a pesticide manufacturer is not a problem. Debating the safety of the

company's product without full disclosure that the company is funding your research is a problem. It can affect the world's assessment of your independence and objectivity."

"Funding bias," which skews scientific studies toward the interests of their financial sponsors, is a well-documented phenomenon. But evidence also suggests that corporations have underwritten pesticide-friendly research as part of a larger strategy. "We call it 'doubt-mongering,'" explains Harvard University science historian Naomi Oreskes, co-author of *Merchants of Doubt* (2010). "If you create doubt in people's minds, you can delay action to regulate a product."

Take the example of bisphenol A, used to make plastic bottles. According to a 2005 review of 115 studies that examined the effects of the industrial chemical on living organisms, 94 of the 104 that were publicly funded uncovered harmful results—none of the 11 funded by industry did. The chemical manufacturers, however, used their own studies to call into question any opposing findings.

Oreskes says this strategy was also used by Big Tobacco. In the 1950s, cigarettes were found to cause cancer—in response, the industry built a sophisticated public-relations apparatus to obfuscate the link. In 1979, for instance, R. J. Reynolds established a $45 million research program at top universities in the US, including Harvard, to study degenerative diseases and how things like stress affect health. The purpose of this

research, according to internal tobacco documents, was to develop "data useful in defending the industry against attacks." In short, it was intended to arm tobacco executives with information that would allow them to argue that there were other possible causes for premature deaths in smokers. "There's a very famous tobacco-industry document where they say 'doubt is our product,'" says Stanton Glantz, a professor of medicine at the University of California, San Francisco. "They funded research designed to confuse people about everything you could possibly think of related to tobacco."

Since then, pharmaceutical, oil, and agrochemical companies have been accused of taking a page from this playbook. Industry groups create apparently neutral websites to promote the safety of their products, and serve up experts who share with the public positive messages about pesticides—both tactics used in response to Cumberland's campaign. Most important, they fund scientists who produce supportive research.

According to Kathleen Cooper, a senior researcher with the Canadian Environmental Law Association, industry-funded scientists often subscribe to a paradigm of risk assessment that demands an extremely high standard of proof of harm before they will accept something as toxic. "It's the reason we hardly ban stuff anymore. It's the paradigm industry insisted upon, and they won that battle. Government agencies are now entrenched in it."

According to this risk model, when chemicals enter the environment at recommended amounts, they are assumed to pose little or no risk to people or animals—until overwhelming evidence suggests otherwise. Studies that produce unfavourable results are often treated as outliers. "The people who've made a living off this paradigm believe in it," says Cooper. "It's a belief system as much as a scientific system."

Cumberland understands how difficult it is to shake that belief system. Now teaching in Fredericton, he notes that glyphosate is still being sprayed in New Brunswick, and that one of the herbicide's biggest users, J. D. Irving, has reportedly jumped into a multi-year $1.5 million research project with the University of New Brunswick and the University of Maine to study the deer decline. "It's about proving that glyphosate is safe," says Cumberland, who believes that, whatever the finding, the industry is too invested in the chemical to give it up. "I have no idea what the next step is. We just have to continue to educate the public on the issue. If you spray this stuff, it has an impact. It has a cost. People have to ignore the science not to realize that."

Tyrone Hayes is one of America's most famous dissident scientists. A biologist at the University of California, Berkeley, he has been the subject of a lengthy profile in *The New Yorker* and a documentary film by Hollywood director Jonathan Demme, both of which explored the protracted campaign Syngenta mounted to discredit him after he questioned the environmental safety of their best-selling weed killer, atrazine. (The company's strategy to "exploit Hayes's faults/problems" was detailed in internal PR memos obtained by lawyers in 2004.)

Hayes's struggle with Syngenta made headlines—less well known, however, is the role University of Guelph scientists played in countering his research.

Invented in 1958, atrazine is sprayed on crops such as maize, canola, and sugar cane. Effective against weeds that have grown resistant to glyphosate, it is the second-most widely used herbicide in the US, and the one most frequently detected in the country's drinking water. (It was banned by the European Union in 2003 because of concerns about groundwater contamination.) About 34.5 million kilograms of the chemical are sprayed across the US every year, and more than 500,000 kilograms are sold annually in Canada.

Syngenta AG, a global Swiss agrochemical company, is the world's largest manufacturer of atrazine. When the EPA ordered a large-scale review of the chemical in 1994, Syngenta (known then as Novartis AG) assembled a panel of scientists through a consulting firm called EcoRisk, and invited Hayes, a Harvard-educated scientist, to join. Hayes

began studying atrazine's effects on amphibians. He soon discovered that atrazine had a dramatic impact on the sexual organs of frogs: some of the specimens he dissected could no longer be clearly identified as male or female.

By 2000, Hayes had cut ties with Syngenta and begun publishing his own findings: frogs exposed to atrazine at levels thirty times *below* what the EPA permitted in water, it seemed, were being transformed into hermaphrodites. He concluded that atrazine was contributing to the decline of frog populations around the world. "Atrazine is an endocrine-disruptor," he says. "And the concern is that it increases estrogen production. That means male frogs turn into females. In humans, it's associated with things like breast cancer, prostate cancer, decreased sperm count, and infertility. It's also associated with birth defects, including male genital malformations."

Syngenta disputed Hayes's results. According to Chris Davison, a company spokesperson, "No one has, will, or can ingest enough atrazine via drinking water to adversely affect their health." He notes that the EPA reviewed the relevant laboratory and field studies of amphibians, and concluded that atrazine "does not adversely affect amphibian gonadal development"—a conclusion its Scientific Advisory Panel reaffirmed in 2011.

But last June, the agency appeared to reverse this decision. It released a 500-page draft report that stated that atrazine exceeded its "levels of concern" for chronic risk to birds, mammals, and fish. Syngenta declared the findings "scientifically unjustified" and complained that the report contained "numerous data and methodological errors."

Hayes says the studies that have determined that atrazine is not harmful to frogs have one thing in common—they're all funded by Syngenta. He doesn't think it's an accident that, as part of its campaign to undermine him, the company asked academics they considered friendly to test his findings. Among those academics were two University of Guelph scientists: biologist Glen Van Der Kraak and Keith Solomon.

Solomon, who was on Syngenta's Eco-Risk panel, has for two decades claimed that atrazine isn't harmful at the levels found in the environment. He has also accepted sums from Syngenta—nearly $110,000 between 2011 and 2014 alone—to conduct studies on its product. In 2013, he received $14,976 to examine atrazine's effects on a species of green algae that exists in symbiosis with salamander embryos. Solomon concluded that the algae exhibited a tolerance to the herbicide greater than that of other species. "He never met a chemical he didn't like," quips Hayes.

Targeting Hayes, and other scientists who had produced similar results, Syngenta funded a massive study that examined more than 100 papers on the chemical. Released in 2008 and co-written by six researchers, among them Van Der Kraak and Solomon, it concluded "that environmentally relevant concentrations of atrazine do not affect amphibian growth, sexual development, reproduction, and survival."

Studies have shown that the peer-review system is subjective, prone to bias, and unreliable when it comes to catching errors.

However, Jason Rohr, a biologist at the University of South Florida, examined the Syngenta-backed study and found it rife with errors. "They misrepresented over fifty papers from the scientific literature,"

Rohr says. “There were 122 inaccurate or misleading statements in their review paper, and about 97 or 98 percent of them were biased in the direction of suggesting that atrazine was safer than it was.” Rohr assembled a detailed list of statements he considered false. The Solomon group suggested, for example, that one atrazine study had used charcoal filters in tanks to which the chemical was introduced: “Since charcoal will absorb atrazine, this may have affected exposure concentrations” and “seriously . . . compromised the study,” it wrote. But Rohr pointed out that the original researchers had not placed filters in the tanks at all.

In his co-authored critique of the Syngenta-funded study, Rohr noted that Solomon and his co-authors “cast doubts on the validity of 94 percent of the sixty-three presented cases where atrazine had adverse effects, whereas they only weakly criticized 2.8 percent of the seventy cases where there were no effects of atrazine at environmentally relevant concentrations.” He added that his group “ found no evidence that the criticized studies were more poorly conceived or conducted than those that were not criticized.”

If this is true, how did such a study survive the peer-review process? While peer reviewing is regarded by the public as the gold standard for vetting science, a number of studies reveal that the system is subjective, prone to bias, and unreliable when it comes to catching errors. The process, says Rohr, “is altruistic—most reviewers trust that the primary authors are accurately reflecting the literature. Whether or not this means the process is broken is a matter of opinion. Nevertheless, it isn’t perfect.”

Studies produced at the University of Guelph on behalf of agrochemical companies have also had a profound impact on regulators—as seen in the case of neonicotinoids, or neonics.

Developed by Bayer in the 1980s, neonics are currently used in more than 120 countries and make up a global market of $3 billion (US). One of the world’s most popular class of insecticides, they are applied to almost all corn and to one-third of the soy grown in the US. Of the eighty pest-control products that Canada allows, thirty-six are neonics.

In recent years, bee populations have been declining significantly across North America—in California alone, honey production has fallen by half—and there is reason to believe that, in some regions, neonics are playing a part. In 2014, more than half of the bees in Ontario didn't survive the winter, while other provinces lost on average about 25 percent (an acceptable level of winter loss for Canadian beekeepers is about 15 percent). "We first noticed something wrong in 2010, something that was chronically poisoning the bees," says Tibor Szabo, president of the Ontario Beekeepers' Association. "But then in 2011, there was a lot more, and again in 2012, right at the start of the year, hives were just dropping dead in a twenty-four-hour period."

Davis Bryans is one of the owners of Munro Honey, which has bred bees in Alvinston, Ontario, for more than a century. "We had a big loss in 2012 after the farmers planted early," he recalls. "Bees were healthy in the mornings, and they came back and were dying at the entrance of the hives." When those bees were tested, they were found to have traces of neonics. Munro Honey is now a plaintiff in a class-action lawsuit, launched in 2014 on behalf of Ontario and Quebec beekeepers, that is seeking $450 million in damages from Bayer and Syngenta over the use of neonics. In 2015, the Ontario government introduced regulations that will reduce neonic use in the province by 80 percent.

Why did Canadian and US regulators approve neonics despite the fact that many beekeepers believe they are toxic to bees? One influential study, launched at the University of Guelph in 2005 and funded by Bayer, found that bees exposed to canola grown from neonic-treated seeds showed no long-term effects. The research was conducted by environmental biologist Cynthia Scott-Dupree, currently the Bayer CropScience Chair in sustainable pest management. She has completed at least three Bayer-funded studies on bees and neonics, one of which was co-authored by David Drexler, a former director of development and licensing at Bayer. Both the EPA and the Pest Management Regulatory Agency (PMRA)—which regulates pesticides in Canada—relied on her findings to justify expanding neonics registration in both countries.

But as bee populations around the world declined, the Scott-Dupree study was "downgraded from a core study to a supplemental study by EPA scientists because it was not a strong valid study," says Jim Frazier, a professor emeritus of entomology at Pennsylvania State University.

When scientists at the EPA examined Scott-Dupree's research more closely, they found irregularities in how it had been conducted. The agency said that control and test hives had been placed too close together, resulting in contamination of the controls. Frazier says the bees had access to plants that were not treated with neonics. "And so, of course, the colonies are not going to show degradation inside that neonic-treated field, because that's only a fraction of the food they're consuming," he explains. "So it's really not a valid study for assessing the impact of neonicotinoids on treated pollen, because it's been diluted by other pollen coming in from greater distances."

In 2012, after downgrading Scott-Dupree's original study, the EPA and PMRA asked Bayer to conduct it again. With $950,000 from the company, Scott-Dupree repeated her work, this time following more rigorous standards. In 2014, she arrived at the same results: there was no connection between neonics and bee fatalities. Critics pounced on this study, too, claiming that the colonies she gathered—both the control group and non-control—were taken from areas where bees might have been exposed to neonics. All hives may therefore have had insecticide in their pollen before the study began. "If they wanted a proper control," one Canadian bee inspector told me, "they should have used colonies that could not have had contaminated food sources."

When I contacted Bayer, the company referred me to Croplife Canada, the main lobby group for the country's agrochemical industry. Pierre Petelle, Croplife's vice-president of chemistry, argues that the colony numbers gathered by Statistics Canada suggest the fears may be exaggerated. "When you look at the Canadian situation, with the use of

neonics that we have here, we're just not seeing that storyline of bee decline and massive bee loss. The decline seems much more related to the severity of winter. I mean, if you track how cold and long the winter was, there you start to see a correlation of highs and lows in terms of losses—much more than the neonic use."

Studies not financed by agrochemical companies, however, continue to raise concerns about neonics and bees. In 2015, a group of scientists in Switzerland, along with Dave Shutler, a biologist at Nova Scotia's Acadia University, published a peer-reviewed study in *Scientific Reports* that explored how queen bees—crucial to the health of a colony or hive—are affected by neonics. The team compared a control group of clean queen bees to queens that were exposed to "field-realistic" amounts of the pesticide. The results showed that neonics can affect the development of queen bees' reproductive systems and lead them to store fewer sperm—which in turn can lead to fewer new worker bees. Any honeybee colony that falls below a certain critical mass of workers faces tougher odds of survival. "As a broad statement," Shutler told me, "there's no question that neonics in significant concentrations are toxic to honeybees."

The agrifood industrial complex emphasizes a message: that herbicides and pesticides are a boon to forestry companies and farmers, offering them safe ways to suppress pests and weeds. Scientists who accept the need for such chemicals may not see anything wrong with taking funds from companies to evaluate their effects. "I don't want to give the impression," says Rohr, "that all people supported by the industry are necessarily being unethical or disingenuous in their scientific work. I think people can remain objective."

But Cooper isn't so sure. When she reviews scientific literature on a particular chemical for government consultations, she's skeptical of studies that disclose industry funding. "You're immediately concerned that it could be biased, so you tend to steer clear of them—especially if you have a situation where you see a pattern, where the industry-funded studies find no effect and the more independent work does show an effect. I mean, that's a big red flag."

When asked whether cash from the agrochemical sector was influencing the outcome of research conducted by its scientists, Malcolm Campbell, the vice-president of research at the University of Guelph, responded that "properly conducted research is agnostic to the funding source. As well, our university has established guidelines regarding research integrity and conflict of interest to which all faculty must adhere."

For his part, Ritter disputes the notion that he is pro-industry. "I know there are people who've been critical of my position," he says. "But I don't take a position which is industry friendly. I take a position which is influenced by the data."

Solomon is likewise unapologetic about taking industry money. "Are the works of Beethoven and Mozart any less good because they were paid for?" he asked in 2014 during an interview on Global TV. "We deliver a good product, and we go with the science, we go with the data. We live and die by the data."

An earlier version of this article incorrectly referred to the PMRA as the "Pesticide Management Review Agency." It is, in fact, the Pest Management Regulatory Agency. The Walrus regrets the error.

This originally appeared in the May 2017 edition under the headline "Science for Sale."

Bruce Livesey has produced investigative journalism for CBC, Global TV, the Globe and Mail, and the National Observer.

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I still shop to save my soul, but I know now that what you wear is ephemeral—it's insecurities that last a lifetime

May 1, 2017
14 Melrose Circle South
Rockland, ME 04841

Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333-0028

CC Raymond Connors, BPC

Dear Board of Pesticides Control Members;

We are writing regarding the registration in Maine of products containing the pesticide Paraquat. The individuals of our group, which meets regularly in Camden, are all impacted by Parkinson's Disease. Some of us suffer from the disease, some of us care for those with Parkinson's. One way or another we all live with and are affected by this progressive degenerative neurological condition.

Paraquat is produced in the United Kingdom primarily by Syngenta a corporation based in Switzerland. However its use is banned both in the United Kingdom and the European Union. A 2011 article in the European Journal of Epidemiology reported on a study that people who work with or live near fields sprayed with paraquat and two other pesticides are more likely to suffer from Parkinson's Disease. Earlier in the same year a study published by the National Institutes of Health found that people who used paraquat or the pesticide Rotenone were 2 1/2 times more likely to suffer from Parkinson's. This last study, known as the Farming and Movement Evaluation (FAME) drew on a broad US government project called the Agricultural Health Study which tracked more than 80,000 farmers and their spouses, as well as other people who applied pesticides, in Iowa and North Carolina.

It is our understanding that three pesticide products containing Paraquat are currently registered for use in Maine. We understand our rights and responsibilities regarding notification of pesticide use. However it seems that unless a person is specifically aware of a pesticide's application, there is no way of knowing where and when a pesticide is being used or will be used. In fact, there is no substantive database that reflects more than the most general information about the *amount* of restricted use products used in Maine, and even then only commercial applicators are required to provide such information *at the end of the season.* People who live near blueberry fields are aware of pesticide use. But where are Paraquat products even being used in Maine? Croplands? Roadsides? Power cuts? Without this information how can we act on our "rights and responsibilities"?

Understanding as we all do the deep impact of a disease like Parkinson's on a person's life and the lives of family members; and **seeing no clear way to protect Maine residents from exposure to Paraquat**, we respectfully request that Maine follow the lead of the UK and the Europe Union and ban the use of pesticides containing Paraquat in Maine. In the absence of compelling reasons for the application of such products, we feel that is is hard to justify their continued use in Maine.

We look forward to hearing from you regarding this matter at the above address.

With thanks for your time and consideration, sincerely,

Members of the Parkinson's Support Group, Camden

From: Heather Spalding
Sent: Wednesday, May 03, 2017 12:17 PM
To: Pesticides
Subject: A few other articles for next BPC meeting packet

Hello again folks at Maine's BPC office,

I would like to submit the following materials for inclusion in the upcoming meeting packet.

https://psmag.com/inside-the-academic-journal-that-corporations-love-a1dbe48cca1c

https://mobile.nytimes.com/2017/03/14/business/monsanto-roundup-safety-lawsuit.html?_r=2&referer=

http://www.huffingtonpost.com/entry/usda-drops-plan-to-test-for-monsanto-weed-killer-in_us_58d2db4ee4b062043ad4af84

https://www.sciencedaily.com/releases/2017/04/170426093454.htm

https://www.washingtonpost.com/news/speaking-of-science/wp/2017/04/05/iowa-scientists-find-first-evidence-of-popular-farm-pesticides-in-drinking-water/?utm_term=.4bd2fe99c34f

http://www.foe.org/news/news-releases/2017-05-walmart-and-true-value-to-phase-out-bee-killing-pest

Thanks very much,

Heather Spalding
Deputy Director
MOFGA

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Inside the Academic Journal That Corporations Love

A recent Monsanto lawsuit opens a scary window into the industry of junk science.

By Paul D. Thacker

(Image: Mike Mozart/Flickr)

A recent lawsuit against Monsanto offers a clear and troubling view into industry strategies that warp research for corporate gain. In a lawsuit regarding the possible carcinogenicity of the pesticide Roundup, plaintiffs' lawyers suing Monsanto charge the company with ghostwriting an academic study finding that Roundup's active ingredient, glyphosate, is not harmful. Glyphosate is the world's most widely used weed killer and is critical for successful cultivation of genetically modified crops such as corn and soybean, which are resistant to the pesticide.

Ghostwriting remains pervasive in some areas of academic research; in 2010, I helped author a Senate report on the matter. Studies drafted by corporations and then published in scientific journals with academic authors have been used to sway government decisions, court cases, and even medical practice. A host of universities have been caught in ghostwriting scandals, including Harvard University, Brown University, Stanford University, and Emory University.

The study currently under scrutiny appeared in 2000 in *Regulatory Toxicology and Pharmacology*, the journal of the International Society of Regulatory Toxicology and Pharmacology. On closer inspection, the ghostwriting charges seem unconvincing , and *Science* magazine reports that officials at one university have investigated and rejected the charges.

Monsanto has also strenuously denied the ghostwriting allegations and defends the integrity of the study on a blog: "The paper also underwent the journal's rigorous peer review process before it was published."

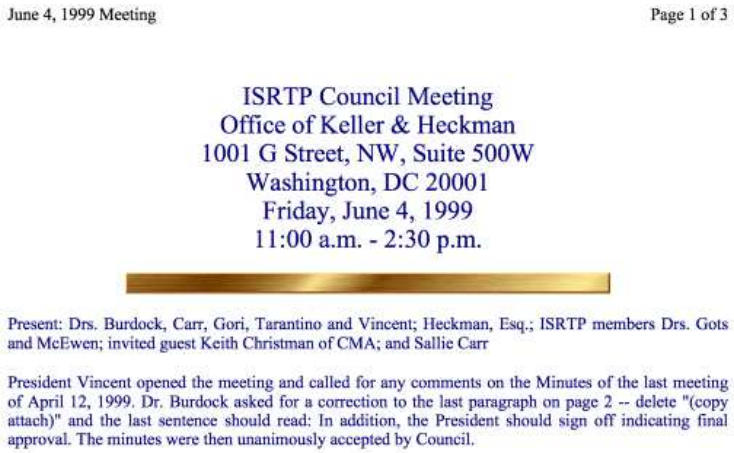
But the term "rigorous" is hardly an accurate description for the journal. Indeed, a glance into the journal's history offers a telling window into the industry of creating and packaging junk science with the appearance of academic rigor.

"*Regulatory Toxicology and Pharmacology* is a vanity journal that publishes mercenary science created by polluters and producers of toxic chemicals to manufacture uncertainty about the science underlying public-health and environmental protections." says David Michaels, professor of environmental and occupational health at the George Washington University School of Public Health. (Michaels recently returned to this position after serving as the administrator of the United States Occupational Safety and Health Administration.)

The problem is that it's not just Monsanto, and it's not just this one journal. Corporations regularly buy academics to do their bidding, recasting industry talking points to create the beginnings of an alternative scientific canon.

The history here is long, and damning. In 2002, several academics and public-health activists sent a letter to Elsevier complaining that the journal lacked transparency and a conflicts-of-interest policy, and that it could not demonstrate editorial independence from corporate sponsors. A couple of years later, I began studying the ISRTP's membership and journal, and combing through the minutes of the society's meetings.

The year before the journal published the Roundup study, the society held its June 1999 council meeting in the Washington, D.C., office of Keller and Heckman, the chief law firm for the chemical industry. In a recent court case, for example, Keller and Heckman represented the Vinyl Institute in a lawsuit to roll back 2012 regulations from the Environmental Protection Agency limiting toxics emitted during PVC production. Keller and Heckman also bills itself as the premier law firm for the tobacco and e-vapor industries. The minutes from the June meeting note a member of Keller and Heckman attending along with representatives of several chemical industry trade associations. Minutes from February 2002 also record the meeting taking place in Keller and Heckman's D.C. office and state that future meetings will also be held at the law firm.



June 4, 1999 Meeting Page 1 of 3

ISRTP Council Meeting
Office of Keller & Heckman
1001 G Street, NW, Suite 500W
Washington, DC 20001
Friday, June 4, 1999
11:00 a.m. - 2:30 p.m.

Present: Drs. Burdock, Carr, Gori, Tarantino and Vincent; Heckman, Esq.; ISRTP members Drs. Gots and McEwen; invited guest Keith Christman of CMA; and Sallie Carr

President Vincent opened the meeting and called for any comments on the Minutes of the last meeting of April 12, 1999. Dr. Burdock asked for a correction to the last paragraph on page 2 -- delete "(copy attach)" and the last sentence should read: In addition, the President should sign off indicating final approval. The minutes were then unanimously accepted by Council.

(Image: Paul D. Thacker)

"[I]t is unusual to see a regulatory toxicology journal run out of a law practice office!" says Dr. Lynn Goldman, dean of the Milken Institute School of Public Health at George Washington University and one of the signatories on the 2002 letter.

"Having its meetings hosted by a corporate law firm is so obviously inappropriate—unless you aren't so much a scientific society as a faux-science outlet for the corporate clients and funders of the journal's authors," says Jennifer Sass, a senior scientist who specializes in chemical policy at the Natural Resources Defense Council and is another of the 2002 letter signatories. After reviewing the Roundup study published in 2000, Sass says it doesn't appear to be "what we normally call ghostwriting." The study's acknowledgement section, which is hidden behind the journal's paywall, clearly notes Monsanto's heavy involvement in the study's science.*

"These people wouldn't be able to stuff the scientific literature so successfully—muddying the waters and creating the false impression of controversy—if they didn't have their go-to journals like *Reg Tox Pharm*," she adds.

Examining the journal's editorial board, Sheldon Krimsky, a professor at Tufts University who studies conflicts of interest and corporate influence on science, notes that industry consultants litter the journal's masthead. Indeed, the journal's editor is Gio Gori, a former consultant for the tobacco industry. In 1998, Gori partnered with

Steven J. Milloy of JunkScience.com in a letter to *Science* magazine criticizing a story about tobacco consultants. I later outed Milloy in the *New Republic* for being on the payroll of the tobacco companies while writing articles for FoxNews.com that disparaged the science of second-hand smoke. And, in 2007, Gori published an op-ed in the *Washington Post* calling the science of second-hand smoke "bogus."

Gori's work for tobacco, Krimsky says, "places his credibility down at the bottom."

Other controversial members of the journal's editorial board include Michael L. Dourson and Dennis J. Paustenbach. Dourson is the president of TERA, a scientific consulting firm that was the subject of a 2014 investigation by Inside Climate News and the Center for Public Integrity highlighting the group's cozy ties to industry. Documents made public during tobacco litigation note Dourson's work for the industry.

When questioned about his tobacco consulting, Dourson said: "Jesus hung out with prostitutes and tax collectors. He had dinner with them." He continued, "We're an independent group that does the best science for all these things. Why should we exclude anyone that needs help?"

In 2005, the *Wall Street Journal* ran a front-page story questioning the role of Paustenbach and his company ChemRisk in a case that became the basis for the movie *Erin Brockovich*. According to the *Journal*, ChemRisk was hired to reanalyze data from a study that found chromium-contaminated groundwater linked with a range of public-health illnesses. Chemrisk's reanalysis of data was then published in a new study under the names of two Chinese researchers without any mention of ChemRisk's involvement, and was promoted for the next decade in court cases and regulatory filings. After the *Journal* article,

the study was retracted, and environmental groups sought to have Paustenbach censured by the Society of Toxicology.

Seven years later, the *Chicago Tribune* wrote an investigative story critical of Paustenbach's work for the chemical industry on flame retardants, and the Center for Public Integrity published an investigation last year noting Paustenbach's work for Ford Motor Company to downplay the dangers of asbestos in car brake pads.

"This might be a kind of a rogue journal that looks like a journal," Krimsky says.

The problem is that it's not just Monsanto, and it's not just this one journal. Corporations regularly buy academics to do their bidding, recasting industry talking points to create the beginnings of an alternative scientific canon. Universities do little to stop it, while academic journals, sometimes prestigious, are often complicit. Perhaps public shame remains the most—or only—effective medicine.

**UPDATE—March 28, 2017: This post has been updated with a new quote from Jennifer Sass.*

Monsanto Weed Killer Roundup Faces New Doubts on Safety in Unsealed Documents

A scanning machine illuminating a bottle of Roundup, a weed killer, as it moved along a production line at a facility in Antwerp, Belgium, owned by Monsanto.
JASPER JUINEN / BLOOMBERG

By DANNY HAKIM
MARCH 14, 2017

Francisco has challenged that conclusion, building on the findings of an international panel that claimed Roundup's main ingredient might cause cancer.

The court documents included Monsanto's internal emails and email traffic between the company and federal regulators. The records suggested that Monsanto had ghostwritten research that was later attributed to academics and indicated that a senior official at the Environmental Protection Agency had worked to quash a review of Roundup's main ingredient, glyphosate, that was to have been conducted by the United States Department of Health and Human Services.

The documents also revealed that there was some disagreement within the E.P.A. over its own safety assessment.

company to prepare a public relations assault on the finding well in advance of its publication. Monsanto executives, in their internal email traffic, also said Mr. Rowland had promised to beat back an effort by the Department of Health and Human Services to conduct its own review.

Dan Jenkins, a Monsanto executive, said in an email in 2015 that Mr. Rowland, referring to the other agency's potential review, had told him, "If I can kill this, I should get a medal." The review never took place. In another email, Mr. Jenkins noted to a colleague that Mr. Rowland was planning to retire and said he "could be useful as we move forward with ongoing glyphosate defense."

The safety of glyphosate is not settled science. A number of agencies, including the European Food Safety Agency and the E.P.A., have disagreed with the international cancer agency, playing down concerns of a cancer risk, and Monsanto has vigorously defended glyphosate.

But the court records also reveal a level of debate within the E.P.A. The agency's Office of Research and Development raised some concern about the robustness of an assessment carried out by the agency's Office of Pesticide Programs, where Mr. Rowland was a senior official at the time, and recommended in December 2015 that it take steps to "strengthen" its "human health assessment."

In a statement, Monsanto said, "Glyphosate is not a carcinogen."

It added: "The allegation that glyphosate can cause cancer in humans is inconsistent with decades of comprehensive safety reviews by the leading regulatory authorities around the world. The plaintiffs have submitted isolated documents that are taken out of context."

The E.P.A. had no immediate comment, and Mr. Rowland could not be reached immediately.

Monsanto also rebutted suggestions that the disclosures highlighted concerns that the academic research it underwrites is compromised. Monsanto frequently cites such research to back up its safety claims on Roundup and pesticides.

paper that eventually appeared "underwent the journal's rigorous peer review process before it was published."

David Kirkland, one of the scientists mentioned in the email, said in an interview, "I would not publish a document that had been written by someone else." He added, "We had no interaction with Monsanto at all during the process of reviewing the data and writing the papers."

The disclosures are the latest to raise concerns about the integrity of academic research financed by agrochemical companies. Last year, a review by The New York Times showed how the industry can manipulate academic research or misstate findings. Declarations of interest included in a Monsanto-financed paper on glyphosate that appeared in the journal Critical Reviews in Toxicology said panel members were recruited by a consulting firm. Email traffic made public shows that Monsanto officials discussed and debated scientists who should be considered, and shaped the project.

"I think it's important that people hold Monsanto accountable when they say one thing and it's completely contradicted by very frank internal documents," said Timothy Litzenburg of the Miller Firm, one of the law firms handling the litigation.

The issue of glyphosate's safety is not a trivial one for Americans. Over the last two decades, Monsanto has genetically re-engineered corn, soybeans and cotton so it is much easier to spray them with the weed killer, and some 220 million pounds of glyphosate were used in 2015 in the United States.

"People should know that there are superb scientists in the world who would disagree with Monsanto and some of the regulatory agencies' evaluations, and even E.P.A. has disagreement within the agency," said Robin Greenwald, a lawyer at Weitz & Luxenberg, which is also involved in the litigation. "Even in the E.U., there's been a lot of disagreement among the countries. It's not so simple as Monsanto makes it out to be."

Correction: *March 18, 2017*
An article on Wednesday about documents unsealed in a case over exposure to

Carey Gillam, Contributor
I am a veteran journalist and research director for U.S. Right to Know, a non-profit consumer education group.

USDA Drops Plan To Test For Monsanto Weed Killer In Food

Much more research is needed to understand the impact on human health of chronic dietary exposures to pesticides, many say.

03/23/2017 03:41 pm ET | **Updated** Mar 27, 2017

The U.S. Department of Agriculture has quietly dropped a plan to start testing food for residues of glyphosate, the world's most widely used weed killer and the key ingredient in Monsanto's branded Roundup herbicides.

The agency spent the last year coordinating with the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) in preparation to start testing samples of corn syrup for glyphosate residues on April 1, according to internal agency documents obtained through Freedom

year, the glyphosate testing plan was moving forward. But when asked about the plan this week, a USDA spokesman said no glyphosate residue testing would be done at all by USDA this year.

The USDA's plan called for the collection and testing of 315 samples of corn syrup from around the United States from April through August, according to the documents. Researchers were also supposed to test for the AMPA metabolite, the documents state. AMPA (aminomethylphosphonic acid) is created as glyphosate breaks down. Measuring residues that include those from AMPA is important because AMPA is not a benign byproduct but carries its own set of safety concerns, scientists believe.

On Jan. 11, USDA's Diana Haynes wrote to colleagues within USDA:

> *"Based on recent conversations with EPA, we will begin testing corn syrup for glyphosate and its AMPA metabolite April 1, 2017 with collection ending August 31, 2017. This program change will need to be announced at the February PDP Conference Call."*

Haynes is director of a USDA Agricultural Marketing Service division that annually conducts the Pesticide Data Program (PDP), which tests thousands of foods for hundreds of different pesticide residues.

The USDA spokesman, who did not want to be named, acknowledged there had been a glyphosate test plan but said that had recently changed: "The final decision for this year's program plan, as a more efficient use of resources, is to sample and test honey, which covers over 100 different pesticides." Glyphosate residue testing requires a different methodology and will not be part of that screening in honey, he said.

The USDA does not routinely test for glyphosate as it does for other pesticides used in food production. But that stance has made the USDA the subject of criticism as controversy over glyphosate safety has mounted in recent years. The discussions of testing this year come as U.S. and European regulators are wrestling with cancer concerns about the chemical, and as Monsanto, which has made billions of dollars from its glyphosate-based herbicides, is being sued by hundreds of people who claim exposures to Roundup caused them or their loved ones to suffer from non-Hodgkin lymphoma. Internal Monsanto documents obtained by plaintiffs' attorneys in those cases indicate that Monsanto may have manipulated research regulators relied on to garner favorable safety assessments, and last week, Congressman Ted Lieu called for a probe by the Department of Justice into Monsanto's actions.

Along with the USDA, the Food and Drug Administration also annually tests thousands of food

unsafe levels in food products commonly eaten by American families. If they find residues above the "maximum residue level" (MRL) allowed for that pesticide and that food, the agencies are supposed to inform the EPA, and actions can be taken against the supplier. The EPA is the regulator charged with establishing MRLs, also called "tolerances," for different types of pesticides in foods, and the agency coordinates with USDA and FDA on the pesticide testing programs.

But despite the fact that glyphosate use has surged in the last 20 years alongside the marketing of glyphosate-tolerant crops, both USDA and FDA have declined to test for glyphosate residues aside from one time in 2011 when the USDA tested 300 soybean samples for glyphosate and AMPA residues. At that time the agency found 271 samples contained glyphosate, but said the levels were under the MRL — low enough not to be worrisome. The Government Accountability Office took both agencies to task in 2014 for the failure to test regularly for glyphosate.

Europe and Canada are well ahead of the United States when it comes to glyphosate testing in food. In fact, the Canadian Food Inspection Agency (CFIA) is preparing to release its own findings from recent glyphosate testing. The CFIA also routinely skipped glyphosate in annual pesticide residue screening for years. But it began collecting data in 2015, moving to address concerns about the chemical that were highlighted when the World Health Organization's International Agency for Research on Cancer (IARC) classified glyphosate as a probable human carcinogen in March 2015.

Canadian food activist and researcher Tony Mitra obtained more than 7,000 records from CFIA about its glyphosate testing last year, and claims that results are alarming, showing glyphosate pervasive in many foods. CFIA would not respond to requests for comment about its glyphosate testing.

One of the USDA's explanation's for not testing for glyphosate over the years has been cost – the agency has said that it is too expensive and inefficient to look for glyphosate residues in food headed for American dinner tables. And because glyphosate is considered so safe, testing would be a waste of time, the USDA has stated. That argument mimics Monsanto's own – the company, which patented glyphosate in 1974 and has been a dominant provider of glyphosate ever since, says if the USDA did seek to test for glyphosate residues in food it would be a "misuse of valuable resources."

FDA TESTS REMAIN IN LIMBO

The FDA began its own limited testing program for glyphosate residues — what it called a "special assignment" — last year. But the effort was fraught with controversy and internal difficulties and the program was suspended last fall. Before the suspension, one agency chemist found alarming levels of glyphosate in many samples of U.S. honey, levels that were technically illegal because there have been no allowable levels established for honey by the EPA. That revelation caused angst in the beekeeping industry and at least one large honey company was sued by consumer organizations

of oatmeal, including infant oat cereal. The FDA did not publicize those findings, but they were revealed in internal records obtained through a FOIA request.

Officially, the FDA was only looking for glyphosate residues in corn, soy, eggs and milk in last year's testing assignment, though internal records discussed tests on sugar beets, popcorn, wheat and other foods or grains. Newly obtained FDA documents show the agency is engaged now in a "glyphosate collaboration" designed to validate the testing methodology to be used by multiple FDA laboratories.

"Once the first phase of this collaboration is completed and approved by quality control reviewers, the special assignment can be restarted," said FDA spokeswoman Megan McSeveney.

CropLife America, an industry organization that represents the interests of Monsanto and other agrichemical companies, keeps a close eye on the government's pesticide residue testing. Last year the organization sought to diffuse potential legal problems related to glyphosate and other pesticides in honey by asking EPA to set a blanket tolerance that would cover inadvertent contamination of honey by pesticides. Records show regulators have found 26 different pesticides in honey samples in past tests.

CropLife also has complained to USDA that data from its testing program is used by proponents of organic agriculture to promote organics over conventional foods. The group last year sent USDA a series of questions about its testing, and asked USDA: "What can we do to assist you in fighting these scaremongering tactics?"

The USDA's most recent published report on pesticide residues in food found that for 2015 testing, only 15 percent of the 10,187 samples tested were free from any detectable pesticide residues. That's a marked difference from 2014, when the USDA found that over 41 percent of samples were "clean" or showed no detectable pesticide residues. But the agency said the important point was that most of the samples, over 99 percent, had residues below the EPA's established tolerances and are at levels that "do not pose risk to consumers' health and are safe."

Many scientists take issue with using MRLs as a standard associated with safety, arguing they are based on pesticide industry data and rely on flawed analyses. Much more research is needed to understand the impact on human health of chronic dietary exposures to pesticides, many say.

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Why Monsanto Just Rejected A $62 Billion Mega-Merger Offer

FDA Finally Agrees To Test Food For Monsanto's Glyphosate

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Common pesticide damages honey bees' ability to fly

Date: April 26, 2017

Source: University of California San Diego

Summary: Biologists have provided the first evidence that a widely used pesticide can significantly impair the ability of otherwise healthy honey bees to fly. The study, which employed a bee “flight mill,” raises concerns about how pesticides affect honey bee pollination and long-term effects on the health of honey bee colonies.

FULL STORY

A honey bee (Apis mellifera) is harnessed for study on a flight mill in biology professor James Nieh’s laboratory, UC San Diego.

Credit: Simone Tosi, UC San Diego

Biologists at the University of California San Diego have demonstrated for the first time that a widely used pesticide can significantly impair the ability of otherwise healthy honey bees to fly, raising concerns about how pesticides affect their capacity to pollinate and the long-term effects on the health of honey bee colonies.

Previous research has shown that foraging honey bees that ingested neonicotinoid pesticides, crop insecticides that are commonly used in agriculture, were less likely to return to their home nest, leading to a decrease in foragers.

A study published April 26 in *Scientific Reports* by UC San Diego postdoctoral researcher Simone Tosi, Biology Professor James Nieh, along with Associate Professor Giovanni Burgio of the University of Bologna, Italy, describes in detail how the neonicotinoid pesticide thiamethoxam damages honey bees. Thiamethoxam is used in crops such as corn, soybeans and cotton. To test the hypothesis that the pesticide impairs flight ability, the researchers designed and constructed a flight mill (a bee flight-testing instrument) from scratch. This allowed them to fly bees under consistent and controlled conditions.

Months of testing and data acquisition revealed that typical levels of neonicotinoid exposure, which bees could experience when foraging on agricultural crops -- but below lethal levels -- resulted in substantial damage to the honey bee's ability to fly.

"Our results provide the first demonstration that field-realistic exposure to this pesticide alone, in otherwise healthy colonies, can alter the ability of bees to fly, specifically impairing flight distance, duration and velocity" said Tosi. "Honey bee survival depends on its ability to fly, because that's the only way they can collect food. Their flight ability is also crucial to guarantee crop and wild plant pollination."

Long-term exposure to the pesticide over one to two days reduced the ability of bees to fly. Short-term exposure briefly increased their activity levels. Bees flew farther, but based upon other studies, more erratically.

"Bees that fly more erratically for greater distances may decrease their probability of returning home," said Nieh, a professor in UC San Diego's Division of Biological Sciences.

This pesticide does not normally kill bees immediately. It has a more subtle effect, said Nieh.

"The honey bee is a highly social organism, so the behavior of thousands of bees are essential for the survival of the colony," said Nieh." We've shown that a sub-lethal dose may lead to a lethal effect on the entire colony."

Honey bees carry out fundamentally vital roles in nature by providing essential ecosystem functions, including global pollination of crops and native plants. Declines in managed honey bee populations have raised concerns about future impacts on the environment, food security and human welfare.

Neonicotinoid insecticides are neurotoxic and used around the world on broad varieties of crops, including common fruits and vegetables, through spray, soil and seed applications. Evidence of these insecticides has been found in the nectar, pollen and water that honey bees collect.

"People are concerned about honey bees and their health being impaired because they are so closely tied to human diet and nutrition," said Nieh. "Some of the most nutritious foods that we need to consume as humans are bee-pollinated."

Story Source:

Materials provided by **University of California San Diego**. *Note: Content may be edited for style and length.*

Journal Reference:

1. Simone Tosi, Giovanni Burgio, James C. Nieh. **A common neonicotinoid pesticide, thiamethoxam, impairs honey bee flight ability**. *Scientific Reports*, 2017; 7 (1) DOI: 10.1038/s41598-017-01361-8

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The Washington Post

Speaking of Science

First evidence found of popular farm pesticides in drinking water

By Ben Guarino April 5

Of the many pesticides that American farmers have embraced in their war on bugs, neonicotinoids are among the most popular. One of them, called imidacloprid, is among the world's best-selling insecticides, boasting sales of over $1 billion a year. But with their widespread use comes a notorious reputation — that neonics, as they are nicknamed, are a bee killer. A 2016 study suggested a link between neonicotinoid use and local pollinator extinctions, though other agricultural researchers contested the pesticides' bad rap.

As the bee debate raged, scientists studying the country's waterways started to detect neonicotinoid pollutants. In 2015, the U.S. Geological Survey collected water samples from streams throughout the United States and discovered neonicotinoids in more than half of the samples.

And on Wednesday, a team of chemists and engineers at the USGS and University of Iowa reported that they found neonicotinoids in treated drinking water. It marks the first time that anyone has identified this class of pesticide in tap water, the researchers write in Environmental Science & Technology Letters.

Gregory LeFevre, a study author and U of Iowa environmental engineer, told The Washington Post that the find was important but not immediate cause for alarm.

"Having these types of compounds present in water does have the potential to be concerning," he said, "but we don't really know, at this point, what these levels might be."

If the dose makes the poison, the doses of insect neurotoxin reported in the new study were quite small. The scientists collected samples last year from taps in Iowa City as well as on the university campus and found neonicotinoid concentrations ranging from 0.24 to 57.3 nanograms per liter — that is, on a scale of parts per trillion. "Parts per trillion is a really, really small concentration," LeFevre said, roughly equal to a single drop of water plopped into 20 Olympic-size swimming pools.

The Environmental Protection Agency has not defined safe levels of neonicotinoids in drinking water, in part because the chemicals are relative newcomers to the pesticide pantheon. “There is no EPA standard for drinking water,” LeFevre said.

The pesticides, most of which were released in the 1990s, were designed to be more environmentally friendly than other chemicals on the market. The compounds work their way into plant tissue rather than just coating the leaves and stems, requiring fewer sprays. And though the pesticides wreak havoc on insect nervous systems, neonicotinoids do not easily cross from a mammal’s bloodstream into a mammalian brain.

In 2015, environmental health scientists at George Washington University and the National Institutes of Health published a review of human health risks from neonic pesticide exposure. Acute exposure — to high concentrations over a brief period — resulted in “low rates of adverse health effects.” Reports of chronic, low-level exposure had “suggestive but methodologically weak findings,” with a Japanese study associating neonicotinoids with memory loss.

Melissa Perry, a public health researcher at George Washington University who was involved in that review, said via email that the new study “provides further evidence that neonicotinoid pesticides are present in our daily environments. From a public health standpoint, this issue clearly needs better attention.”

The Iowa scientists tracked neonicotinoid concentrations in the local drinking supply from May to July, the seven-week span after the region’s farmers planted maize and soy crops. Every sample contained three types of neonicotinoids: clothianidin, imidacloprid and thiamethoxam.

“Everything in the watershed is connected,” LeFevre said. “This is one of many types of trace pollutants that might be present in rivers.” (The USGS released an interactive map of the nation’s water quality on Tuesday, where those inclined can track trends in common pollutants.)

Most water filtration systems target clay, dirt or other particles, as well as pathogenic contaminants like bacteria. They’re not designed to eliminate chemical pesticides — and the properties of neonicotinoids make these compounds unusually challenging to remove. Other types of pesticides stick to soil particles, which are then filtered out. But neonicotinoids can slip past sand filters because they are polar chemicals. “They dissolve very readily in water,” LeFevre said. He invoked a chemistry aphorism: “Like dissolves like.”

This proved out as the research team looked at how effectively the university’s sand filtration system and Iowa City’s different water treatment technique blocked the three neonicotinoids studied. The university’s sand filter removed 1 percent of the clothianidin, 8 percent of imidacloprid and 44 percent of thiamethoxam. By contrast, the city’s activated carbon filter blocked 100 percent of clothianidin, 94 percent of imidacloprid and 85 percent of thiamethoxam. That finding was “quite a pleasant surprise,” LeFevre said. “It’s definitely not all bad news.”

The activated carbon filters are relatively economical, he said. In fact, after the research was completed, the university installed a similar system on its campus.

Given the study's small sample size and geographical span, Perry said more comprehensive assessments of water supplies are needed "to determine how ubiquitous neonics are in water supplies in other parts of the country." The chance of that happening is unclear. "There is currently no national effort to measure to what extent neonicotinoids are making it into our bodies, be it through water or food," she noted.

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Ben Guarino writes for The Washington Post's Speaking of Science section. Follow @bbguari

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Walmart and True Value to phase out bee-killing pesticides while Ace Hardware lags behind

Posted May. 3, 2017 / Posted by: Erin Jensen

Garden retailers nearly unanimous in rejecting bee-killing pesticides

WASHINGTON, D.C. —Today, Friends of the Earth and its allies are announcing a major advancement in their fight to protect essential pollinator populations. **Walmart (NYSE: WMT)** and **True Value** have decided to eliminate neonicotinoid pesticides, a leading driver of global bee declines, from company garden retail supply chains. This follows an ongoing campaign by Friends of the Earth and allies urging garden retailers, including True Value and Walmart, to stop selling plants treated with neonicotinoids and remove products containing them from store shelves.

In an email to Friends of the Earth, Walmart confirmed that its growers have eliminated neonics from approximately 80 percent of its garden plants. Walmart has also eliminated neonicotinoids in almost all its off-the-shelf gardening products. True Value announced (http://webiva-downton.s3.amazonaws.com/877/57/7/10216/TrueValueStatement_Letters.pdf) that it will phase out products that contain neonicotinoid pesticides by the spring of 2018 and that the company is working with its growing partners to remove neonicotinoids from its plants.

“This is a great day for bees and sends an important message that the market is listening to consumers and sound science in refusing to sell bee-killing pesticides,” said **Tiffany Finck-Haynes, Food Futures Campaigner at Friends of the Earth U.S.** “Friends of the Earth and our allies will continue to challenge Ace Hardware to eliminate these pesticides as quickly as possible to protect pollinators, people and the planet.”

Walmart and True Value join more than 110 retailers across the country, including **Home Depot (NYSE: HD)** and **Lowe's (NYSE: LOW)**, that have made firm commitments to eliminate neonicotinoids. To date, Ace Hardware is the only leading garden retailer that has not made a strong commitment to eliminate neonicotinoids on both plants and off-the-shelf products.

“Ace Hardware needs to stop dragging its feet and immediately adopt a formal public policy to eliminate neonicotinoid pesticides from its plants and products,” said **Lisa Archer, Food & Technology Program Director at Friends of the Earth U.S.** “Given that 40 percent of invertebrate pollinators are on the brink of extinction, it is more important than ever that companies like Ace Hardware and food retailers phase-out pollinator-toxic pesticides to address the bee crisis and protect our environment.”

“Polling clearly shows that American consumers want corporate retailers to commit to eliminate neonics and the vast majority of retailers are listening by saying NO to neonics on their store shelves,” said **Angus Wong, Campaign Manager at SumOfUs.** “Given clear consumer preference and the hundreds of thousands of Americans that have signed petitions to Ace Hardware and Kroger, we call on these retailers to adopt formal policies to eliminate bee-killing pesticides from all stores nationwide.”

A study (http://webiva-downton.s3.amazonaws.com/877/a1/5/8972/GardenersBewareFollowupReport_4.pdf) released by Friends of the Earth and Pesticide Research Institute in August 2016 revealed bee-killing neonicotinoid pesticides in “bee-friendly” home garden plants sold at major retailers. The latest commitments from True Value, Walmart

and Costco (http://www.foe.org/news/archives/2017-01-costco-urges-suppliers-to-limit-use-of-bee-killing-pesticides) (NYSE: COST) show that the industry has moved even further to eliminate these pesticides since the release of the report.

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Organizations that have partnered with Friends of the Earth U.S. in the campaign (http://www.foe.org/projects/food-and-technology/beeaction) to urge garden retailers phase out the use and sale of neonicotinoids include: American Bird Conservancy, Atlanta Audubon Society, Beyond Pesticides, Beyond Toxics, Center for Biological Diversity, Center for Environmental Health, Center for Food Safety, Central Maryland Beekeepers Association, CREDO Action, Ecology Center, Endangered Species Coalition, Environment New York, Environment Texas, Environmental Youth Council, Farmworker Association of Florida, Friends of the Earth Canada, Georgia Organics, GMO Inside, Green America, Maine Organic Farmers and Gardeners Association, League of Conservation Voters, Maryland Pesticide Network, Mercola.com, Natural Resources Defense Council, Northwest Center for Alternatives to Pesticides, Olympia Beekeepers Association, Organic Consumers Association, Pesticide Action Network North America, Planet Rehab, Save our Environment, Sierra Club, Smart on Pesticides Maryland, SumOfUs, Toxics Action Center, Toxic Free North Carolina, Turner Environmental Law Clinic and The Xerces Society for Invertebrate Conservation.

Expert contact: Tiffany Finck-Haynes, (202) 222-0715, tfinckhaynes@foe.org (mailto:tfinckhaynes@foe.org)
Communications contacts: Erin Jensen, (202) 222-0722, ejensen@foe.org (mailto:ejensen@foe.org)

Categories: Food And Technology (/News/Archives/Category/Food+And+Technology), News Releases (/News/Archives/Category/News+Releases) / Tags: Bees (/News/News-Releases/Tag/Bees), Lisa Archer (/News/News-Releases/Tag/Lisa Archer), Neonicotinoids (/News/News-Releases/Tag/Neonicotinoids), Pesticides (/News/News-Releases/Tag/Pesticides), Pollinators (/News/News-Releases/Tag/Pollinators)

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FOLIAR HERBICIDE PLAN FOR CENTRAL MAINE POWER TRANSMISSION LINE RIGHTS-OF-WAY

During the 2017 calendar year, Central Maine Power Company (CMP) will be treating approximately 7,000 acres as part of our regular vegetation management program. Some of this acreage is comprised of agricultural and industrial uses, and only needs to be patrolled. Integrated vegetation management techniques are employed on the remaining acreage to minimize the use of herbicides.

The first phase of the program requires that a contract crew patrol each right-of-way cutting all hardwood species over 8 feet tall and most of the softwood species. The stumps of trees capable of resprouting are treated with a herbicide. This reduces the amount of foliage that must be treated each cycle. Areas not suitable for foliar herbicide application during the summer are to be entirely cut at this time, and stump treatment to be used where appropriate.

The second phase of this year's program requires that the contract crew patrol each transmission line a second time, treating all remaining tree species capable of growing into the conductors or that block access to the right-of-way. The herbicides are applied with a backpack, hand pressurized spray tank. The tank pressure is low, so the potential for off target movement of the mix is minimized. A contract crew composed of 5 to 8 people will selectively treat the capable species.

A no spray zone is maintained around wells, municipal water supplies or any open water. The buffer zone will vary depending on the topography, a minimum of 25 feet is maintained on all water and a minimum 100-foot buffer is maintained on drinking water supplies. These buffers provide an additional margin of safety.

A low-pressure foliar application technique will be used on the majority of right-of-way scheduled this year. The herbicides and adjuvants, including a drift control agent, are mixed in water at rates of 1/8% - 5%. A hand-pressurized backpack sprayer is used to selectively apply the mix directly to the leaves of the undesirable species. The large droplet size, low tank pressure, and drift control agents, combined with the selective application technique, reduces the potential for drift to a very minimal level. The following is a list of herbicides CMP may use depending on species composition, density and environmental factors:

Garlon 4 Ultra EPA Reg. No. 62719-527
Arsenal Powerline EPA Reg. No. 241-431
Milestone VM EPA Reg. No. 62719-537
Rodeo EPA Reg. No. 62719-324
Stalker EPA Reg. No. 241-398
Aqufact (adjuvant)
HY-Grade I (carrier)
Liberate (adjuvant)
Penetron (adjuvant)
Propolene Glycol (carrier) - used in winter cst mix

Before a treatment technique or herbicide is selected, a review of the right-of-way is conducted including a list of landowner maintenance agreements, known municipal water supplies, and brush densities. This information helps CMP personnel select the herbicides and determine the mix rates.

A form is given to each crew foreman before the job starts listing all special arrangements, herbicides, and mix rates. All the work is performed by licensed contract crews. The contract crews will post a sign on the first structure on each side of all public roads stating the date and herbicide used. If herbicides are not applied near the road crossing structure, the first structure where herbicides are used will be posted.

Each town that has a transmission right-of-way scheduled for herbicide work in 2017 will be notified in advance. A landowner maintenance agreement is available to any landowner or municipality objecting to the use of herbicides. The landowner agrees to keep brush to a height less than 10 feet and a CMP inspector looks over each area annually. CMP personnel will notify the staff of the Board of Pesticide Control at the start of the season of general work locations. Daily locations are available at CMP's General Office.

The following list identifies the CMP transmission section numbers and general locations for 2017 scheduled work. Plan and profile maps for each right-of-way are on file at the General Office in Augusta.

2017 CMP TRANSMISSION VEGETATION MANAGEMENT SCHEDULE

Line	Line Name
1	Winslow to Augusta E. Side
4	Winslow to Detroit
11	Topsham to Bath
19	Bowman Street to Augusta E. Side
20	Searsport to Jct. L. 26
22	Lisbon Falls to Worumbo Hydro
26	Belfast to Searsport
27	Lisbon Falls to Masonite
30	Topsham to Brunswick Hydro
31	Topsham to Brunswick W. Side
31A	Jct. L. 31 to Topsham (old)
32	Rangley to Stratton

32A	Jct. L. 32 to Bigelow
33	Augusta E. Side to Augusta K-5
38	Rice Rips to Augusta E. Side
38A	Jct. L. 38 to W. Waterville
38B	Jct. L. 38 to Bond Brook
40	Winslow to Fort Halifax
42	Deer Rips Hydro to Hotel Road
43	Crowley's to Topsham
45	Gulf Island to Deer Rips Hydro
46	Gulf Island to Deer Rips Hydro
54	Frye to Rangeley
55	Bath to Washington Street
56	Winslow to Rice Rips
56A	Jct. L. 56 to W. Waterville
58	Bath to Washington Street
63	Wyman Hydro to Starks
63A	Jct. L. 63 to Williams Hydro
69	Bath to Surowiec
70	Jct. L.26 & 20 to Prospect
75	Lewiston Lower to Hotel Road
76	Gulf Island to Topsham
76C	Jct. L. 76 to Pejepscot Paper Co.
77	Mason to Bath
77A	Jct. L. 77 to Bath North End
81	Mason to Surowiec
81A	Jct. L. 81 to Topsham
92	Bridgton to Lovell
97	Lovell to Fryeburg
115	Bassett to South Berwick
117	Quaker Hill to Bassett
118	Quaker Hill to Bassett
139	Ogunquit to Bragdon Commons
139A	York Beach to York Harbor
147	Lewiston to Lewiston Lower
148	Great Falls to Lewiston
149	Deer Rips Hydro to Great Falls
151	Pleasant Hill to Cape
151A	Jct. L. 151 to Tank Farm
158	Skelton Hydro to Louden
159	Louden to Vallee Lane
170	Bonny Eagle to Hiram Hydro
173	Moshers to Prides Corner
178	Bolt Hill to Bragdon Commons
179	Red Brook S/Sl to Pleasant Hill
181	Spring Street to Red Brook S/S
185	Sanford Switch to Butlers Corner
185A	Butlers Corner to Lebanon
192	Saco-Lowell #2 to Factory Island

194	Spring St to Long Creek
195	Red Brook S/S to Western Avenue
196	Spring Street to Long Creek
206	Highland to Park Street
206A	Jct. L. 206 to Dragon Products
207	Mason to Bath
207A	Jct. L. 207 to Maine Yankee
209	Raymond to Kimball Road
278	Starks to Livermore Falls
279	Starks to Madison Paper
375	Surowiec to Maine Yankee
377	Maine Yankee to Surowiec
3038	Buxton to Surowiec

MEPCO

Line	Line Name
3001MPS	Kesswick, NB to Penobscot River
3015	Chester SVC to Keene Rd

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

April 26, 2017

Don Weimann
Asplundh Tree Expert Co.-Railroad Division
720 County Rd 400
Ironton, OH 45638

RE: Variance permit for CMR 01-026 Chapter 29

Dear Mr. Chateauvert:

This letter will serve as your variance permit for Section 6 of Chapter 29 for vegetation control on railroad rights of-way.

The Board recently authorized the issuance of two-year permits for Chapter 29, therefore this permit is valid until December 31, 2018, as long as applications are consistent with the information provided on the variance request. Please notify the Board in advance of significant changes, particularly if you plan to use a different product from those listed.

Please bear in mind that your permit is based upon your company adhering to the precautions listed in Section X of your Chapter 29 variance request.

I will alert the Board at its May 12, 2017 meeting that the variance permit has been issued. If you have any questions concerning this matter, please feel free to contact me at 287-2731.

Sincerely,

Anne Chamberlain
Policy & Regulations Specialist
Maine Board of Pesticides Control

HENRY JENNINGS, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

March 29, 2017

Brian Chateauvert
RWC, Inc.
P.O. Box 876
248 Lockhouse Road
Westfield, MA 01086-0876

RE: Variance permit for CMR 01-026 Chapter 29

Dear Mr. Chateauvert:

This letter will serve as your variance permit for Section 6 of Chapter 29 for vegetation control on railroad rights of-way.

The Board recently authorized the issuance of two-year permits for Chapter 29, therefore this permit is valid until December 31, 2018, as long as applications are consistent with the information provided on the variance request. Please notify the Board in advance of significant changes, particularly if you plan to use a different product from those listed.

Please bear in mind that your permit is based upon your company adhering to the precautions listed in Section X of your Chapter 29 variance request.

I will alert the Board at its May 12, 2017 meeting that the variance permit has been issued. If you have any questions concerning this matter, please feel free to contact me at 287-2731.

Sincerely,

Anne Chamberlain
Policy & Regulations Specialist
Maine Board of Pesticides Control

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PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

March 29, 2017

Ryan Minzner
The Woodlands Club
39 Woods Road
Falmouth, Maine 04105

Re: 2017 Variance Permit

Dear Mr. Minzner:

This letter will serve as The Woodlands Club's Chapter 29 variance permit for your 2017 pest management program. Please bear in mind that this variance permit is dependent upon following the measures outlined in the variance application, particularly Section IX: Method to assure equivalent protection.

We will alert the Board at its May 12, 2017 meeting that the variance permit has been issued. If you have any questions concerning this matter, please feel free to contact me at 287-2731.

Sincerely,

Anne Chamberlain
Policy & Regulations Specialist
Maine Board of Pesticides Control

HENRY JENNINGS, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING

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