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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

BOARD OF PESTICIDES CONTROL

December 2, 2022

9:00 a.m. Board Meeting—Hybrid

Join the meeting in person in Room 118, Marquardt Building, 32 Blossom Lane, Augusta
Or
Join the meeting remotely by video conference hosted in MS Teams:
Join on your computer, mobile app or room device
Click here to join the meeting
Meeting ID: 229 700 878 808
Passcode: GgbJ2s
Or call in (audio only)
+1 207-209-4724 United States, Portland
Phone Conference ID: 744 855 174#

AGENDA

1. Introductions of Board and Staff

2. Minutes of the October 21, 2022 Board Meeting

   Presentation By: Megan Patterson, Director

   Action Needed: Amend and/or approve

3. Request to Extend Special Local Need [24(c)] Registration for Callisto Herbicide (Syngenta Crop Protection, Inc.) for Broadleaf Weeds in Lowbush Blueberries in the Bearing and Nonbearing Years

   Syngenta Crop Protection, Inc. is requesting extension of 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 Lily Calderwood, Maine Cooperative Extension Wild Blueberry Specialist. The expiring 24(c) for Callisto is for use in lowbush 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.

MEGAN PATTERSON, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING

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

Presentations By: Mary Tomlinson, Pesticides Registrar and Water Quality Specialist

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

4. Request to Extend Special Local Need [24(c)] Registration for Milestone Herbicide (Corteva Agrisciences) for Herbaceous Broadleaf Weeds and Woody Plants for Forest Site Preparation

   The extension of this SLN has been requested on behalf of the Maine forest industry. Milestone Herbicide reduces competition by controlling herbaceous broadleaf weeds and woody plants, including native conifers. The industry is seeking to replace the use of glyphosate with aminopyralid.

   Presentations By: Mary Tomlinson, Pesticides Registrar and Water Quality Specialist

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

5. Discussion of Progress on the Risk Assessment of Herbicide Use On School Grounds And Human Health Impacts As Proposed by the Medical Advisory Committee and Directed by the Board

   At the July 16, 2021, meeting, the Board reviewed LD 519—An Act to Protect Children from Exposure to Toxic Chemicals, which directed the Board to convene the Medical Advisory Committee (MAC) to assess the human health impacts of herbicide use on school grounds. The Board agreed that the MAC should take up the LD 519 directive to evaluate the potential impact of herbicides used on school grounds on human health. The MAC met and staff prepared an interim report incorporating commentary from MAC members. This report was presented to the Board and the Legislature's Agriculture, Conservation and Forestry Committee. Staff will provide an update on progress on and challenges to completing the MAC proposed projects.

   Presentations By: Pam Bryer, PhD, Pesticides Toxicologist

   Action Needed: Review/Discuss Provided Information, Provide Guidance

6. Discussion of Progress on Water Quality Monitoring Related to Aerially Applied Herbicides in Forestry

   Executive Order 41 FY 20/21 directed the Board to develop a surface water quality monitoring effort to focus on the aerial application of herbicides in forestry to be conducted in 2022. In an effort to be responsive to this request and to accommodate what was a changing timeline for the completion of the EO request, staff conducted a small preliminary surface water quality monitoring pilot study in 2021. Staff proposed an expanded monitoring project for completion in 2022, but in the absence of additional funding chose to develop standard operating procedures and scout potential sampling sites. Staff will provide an update on the progress on and challenges to completing the EO 41 proposed water quality monitoring project.

   Presentations By: Pam Bryer, PhD, Pesticides Toxicologist

   Action Needed: Review/Discuss Provided Information, Provide Guidance

7. Discussion of Sales and Use Reporting

In 2019, the Board approved funding to develop functionality in MePERLS for the submission of annual use and sales reports. In 2020, staff worked with contractors to develop this functionality. In 2021, staff contracted a temporary employee to begin entering sales and use data from previously submitted records. Also in 2021, LD 524 (collection of pesticide sales and use information) was signed into law. The resolve directed the Board to research workable methods to collect pesticide sales and use records for the purpose of providing information to the public. Staff completed this work and provided a report and presentation to the Legislature's Agriculture, Conservation and Forestry Committee. In 2022, a similar bill was introduced but failed. Also in 2022, staff have spent additional time working with digitized sales and use data. Staff will now provide an update on the work accomplished and challenges encountered while attempting to provide meaningful analysis of sales and use information.

Presentations By: Pam Bryer, PhD, Pesticides Toxicologist

Action Needed: Review/Discuss Provided Information, Provide Guidance

8. Discussion of a Possible Board Planning Session

Prior to 2014 the Board periodically held planning sessions with the entire staff to review Board concerns, issues and priorities. In the past few years, staff have received numerous requests and directives to pursue projects and policy efforts—typically without the allocation of funds and/or staff. Staff would like to discuss the possibility of reviving planning sessions.

Presentations By: Megan Patterson, Director

Action Needed: Review/Discuss Provided Information, Determine Next Steps

9. Discussion of Pesticide Product Affidavit Submission and By Request Limited Duration Extensions

In 2021 and 2022, the Board conducted rulemaking in response to LD 264—Resolve, Directing the Board of Pesticides Control To Gather Information Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State. This resolve directed the Board to amend its rules addressing product registration and require the submission of specific affidavits. The Board finally adopted these rules on April 1, 2022. Staff communicated these regulatory changes to pesticide product registrants. Staff also worked with contracted developers to create functionality to collect affidavits in the pesticide product registration and renewal process. This work was completed prior to the November 1 start of registration renewal season. However, some registrants have indicated that they need additional time to address confidential business and trade secret information. Staff are proposing a short extension of no greater than two months, to end on February 28, 2023. Staff will present the proposed requirements for registrants seeking an extension.

Presentations By: Megan Patterson, Director

Action Needed: Review/Discuss Provided Information, Provide Guidance

10. Discussion of Reciprocal Certification of Applicators Based On Certification Issued by Another State

Since 1974, the Maine Department of Agriculture has been receiving funds from EPA in the form of a program partnership grant. This money supports the regulation of pesticide use in the state. Upon the origination of this partnership, a "Plan for Certification of Pesticide

Applicators" was developed. Since 2018, staff have worked to revise the State Plan and incorporate federal changes to the section of FIFRA pertaining to certification and training rules. EPA has reviewed drafts of the Plan and requested additional clarification of the circumstances under which the Board will issue reciprocal certification. While the Board has broad authority to permit reciprocity, the rules describing the application of this authority are narrow in scope—pertaining primarily to aerial application in emergency situations. Staff will provide a description of the current circumstances under which reciprocity may be permitted and existing and proposed requirements applicators must meet to receive a temporary reciprocal license.

Presentations By: John Pietroski, Manager of Pesticide Programs

Action Needed: Review/Discuss Provided Information, Provide Guidance

11. Discussion of Guidelines for In-person, Virtual, Taped Video, and On-line Recertification Courses

As a part of the State Plan review process, EPA has requested additional information on the Board's standards for recertification courses. Staff have compiled existing standards described in rule and previously approved by the Board. Additionally, in response to the increased interest in virtual trainings, staff have developed standards for these meetings that reflect the current practices in neighboring states as well as the practices of existing Maine-based training collaborators. Staff will present the proposed recertification meeting guidelines.

Presentations By: John Pietroski, Manager of Pesticide Programs

Action Needed: Review/Discuss Provided Information, Provide Guidance

12. Other Old and New Business

a. EPA Federal Register Proposal—Proposed Removal of PFAS Chemicals from Approved Inert Ingredient List for Pesticide Products

b. Civil Eats article

c. Chlorpyrifos permit

d. Other items?

13. Schedule of Future Meetings

January 11, 2023, February 24, 2023, and April 7, 2023 are the next tentative Board meeting dates. The Board will decide whether to change and/or add dates.

The Board will also decide if future meetings will be remote, in-person or hybrid.

Adjustments and/or Additional Dates?

14. 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.

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JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

BOARD OF PESTICIDES CONTROL

October 21, 2022

9:00 a.m. Board Meeting--Hybrid
MINUTES

1. Introductions of Board and Staff

   - Adams, Carlton, Ianni, Jemison, Lajoie
   - Assistant Attorney General, Mark Randlett
   - Boyd, Brown, Bryer, Couture, Nelson, Patterson, Peacock, Pietroski, Tomlinson

2. Minutes of the August 5, 2022 Board Meeting

   Presentation By: Megan Patterson, Director

   Action Needed: Amend and/or approve

   - **Lajoie/Carlton: Moved and seconded to approve the minutes**
   - **In Favor: Unanimous**

3. LD 2019—An Act To Require the Registration of Adjuvants in the State and To Regulate the Distribution of Pesticides with Perfluoroalkyl and Polyfluoroalkyl Substances

   At its June 17, 2022 meeting, the Board reviewed/discussed LD 2019. It requested that the staff provide information on existing regulations relative to pesticide containers and to research options relative to defining what "contamination" means in the context of the bill. Staff has provided two memos, one summarizing the August 5, 2022 Board discussion of possible rulemaking pathways and federal preemption and a second summarizing relevant technical information prepared in response to Board member questions. The second memo also addresses the recently published EPA container leachate study.

   Presentations By: Megan Patterson, Director

   Pam Bryer, Pesticides Toxicologist

   Action Needed: Review/Discuss Provided Information, Determine Next Steps

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90 BLOSSOM LANE, DEERING BUILDING

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- Patterson explained two memos were included in the Board meeting materials and were meant to address two different aspects of relevant to the discussion of LD 2019 and related rulemaking. Staff memo, *Summary of the August 5, 2022 Board Discussion of Pesticide Container Regulation*, discussed policy points made during the last meeting and staff memo, *PFAS Container Contamination Updates*, discussed technical points made. She also explained the purpose of the EPA memo, "EPA Analytical Chemistry Branch Laboratory Study of PFAS Leaching from Fluorinated HDPE Containers" [referred to as the "EPA container study"] and the published article "Targeted Analysis and Total Oxidizable Precursor Assay of Several Insecticides for PFAS" by Steven Lasee et al. included in the packet.

- Bryer stated that most of the technical information included in her memo would be discussed during the afternoon Board training. She told the Board that staff did try to get a speaker from EPA but were unable to. Bryer explained that the 'EPA Analytical Chemistry Branch Laboratory Study of PFAS Leaching from Fluorinated HDPE Containers' found that HDPE containers would lead to PFAS generation in novel and unexpected ways. She stated that in general there were higher concentrations in oily-based matrices, but there were also levels found in water-based fluids. She explained some of the analytical challenges of measuring PFAS in these products. The EPA only ran the study for 20 weeks, and they did not see a perfect increase over time but generally, the longer the product was in the container, the higher the concentration of PFAS. They have not yet reached a plateau where there is no increase of PFAS over time. Bryer stated that the concentrations they are finding when storing a product in a fluorinated HDPE container are in the part per billion range and in the lab they are finding fairly consistent part per trillion contamination. She explained that product contamination occurs at a low concentration, however, given that it occurs at an order of magnitude higher rate than background PFAS contamination this PFAS is clearly linked to the containers. Bryer stated that in conversation with the Director of EPA's Analytical Chemistry Laboratory (Fort Meade, MD) she learned that background contamination could not be ruled out as the cause for levels below the 30 parts per trillion range. She explained how a very tiny contamination event could lead to a part per trillion contamination of a product. In the Fort Meade lab, they do not use sharpies, post-it notes, or wear make-up because those items can all lead to contamination. Bryer added that she believed they would be finding other items that caused contamination for some time.

- Bryer noted that the 'EPA Analytical Chemistry Branch Laboratory Study of PFAS Leaching from Fluorinated HDPE Containers' also found PFOA and its analogs, which have been prohibited for use in the United States for approximately 20 years. If a manufacturer discovers they have an EPA-defined PFAS [EPA's definition of PFAS differs from the State of Maine definition in that EPA's definition requires two fluorinated carbons adjacent to one another, and one of the carbons must be fully fluorinated] in their product at quantifiable levels, they will be required, under FIFRA, to report that to EPA within 30 days of the finding. The EPA considers the detection of quantifiable levels of PFAS as evidence of a reportable contamination event because the presence of PFAS represents "toxicological significance."

- Adams asked about the PFOA that was found and if it was somehow introduced into the product prior to the fluorination process.

- Bryer stated that EPA tested the methanol and the water before testing for PFAS. The producers' affirmed that the containers had no PFAS in them, so these contaminants were

being generated at some time. EPA has tested for the compounds for which they have developed analytical methods. She explained that EPA also used split samples sent to different labs to rule out spurious results. Bryer stated that staff reached out to the Ag Container Recycling Council, ACRC, and asked if they knew what percent of agricultural containers were fluorinated. ACRC said 20-30% of agricultural containers (which includes pesticides, fertilizers, and adjuvants) were fluorinated.

- Bryer also spoke to the Board about PFAS contamination standards in drinking water being lowered. She stated that the scientific community had a reasonable amount of human health data on about seven different PFAS, and each one has its own unique effects at specific concentrations. Bryer said we saw a large drop in the standards for PFOA and PFOS in drinking water, largely because those are the two chemicals on which there is the most data.

- Bryer also provided the Board with a list of pesticide active ingredients in products currently registered in Maine that would be considered PFAS by Maine's definition. She explained the differences between the EPA, Maine and OECD definitions of PFAS. Bryer noted that based on recent conversations with Maine DEP, a few active ingredients may be removed from the list because they would not be considered PFAS.

- Bryer explained to the Board that all inert ingredients for pesticides had to be vetted by EPA before they could be used in a pesticide product. Bryer stated that EPA had proposed the removal of twelve inerts considered PFAS by the EPA definition, but none of those inerts were currently in use. After a cursory look, Bryer found six or seven other inerts that are still in use that would meet EPA's definition of PFAS.

- Ianni asked about the status of the inerts EPA had proposed to remove and if they had gone through and been recorded in the federal register after the public comment period.

- Patterson said she would find out.

- The Board members thanked Bryer for the valuable information she provided.

- Patterson summarized the discussion from the last Board meeting. She noted that the Board had concerns about meeting the statutory deadline, and she stated that they could not meet it at this point, but they could still keep the legislature informed that they had been working on this effort. Patterson added that federal law preempted the Board from creating container regulations, and that likely should have been caught during the legislative process. She told the Board they may be able to pursue a narrow avenue of regulation around the storage of containers, or they could choose to adopt federal law directly into statute. Patterson said the Board could have staff research to find some small foothold where they could pursue regulation, but they should consider whether that would be meaningful. She stated that the Board had already done some of the work by implementing affidavits requiring manufacturers/registrants to state whether their products were stored in fluorinated containers. Patterson stated that staff assumed LD 2019 meant to treat adjuvants the same as pesticides, so adjuvant distributors must also answer the affidavits.

- Adams said he had no problem with staff assuming adjuvants be treated the same as pesticides. Other Board members agreed.

- Randlett stated that all existing laws and statutes regarding pesticides now included adjuvants. He added that even though the Board could not require different kinds of containers or labeling, there might be the ability to consider rules relating to container storage, handling and disposal.
- Jemison asked if applicators would now be required to record adjuvants in their applicator records.
- Patterson stated that the Board would have the authority to determine whether adjuvants needed to be recorded and reported on.
- Randlett concurred that rulemaking did allow flexibility on this.
- The Board discussed whether adjuvants should be part of the annual use and sales reporting and other rules that may apply to adjuvants.
- Adams said he did not have an idea of what number of additional products they would be considering. He asked if, at the next meeting, staff could give the Board an idea of what level of additional work would be added to staff if the Board implemented use and sales reporting for adjuvants.
- Bryer replied that it would be difficult to do since it is a use pattern that has not been tracked.
- Patterson stated that typically there would be a phase-in period for those kinds of changes due to the level of education that would need to go into it. She added that this was the first year with these requirements, and she does not think everyone will have gotten the message. Patterson stated that even a year out we may not be able to determine the full scope of impact on Maine, but we could get an estimate of the number of adjuvants registered in another state, such as Washington.
- Carlton asked about the extra work and how that would affect the budget.
- Patterson responded that they may need to hire staff but would need approval from the legislature to hire anyone other than temp staff at this time. If the BPC did not have the funds to pay additional staff they would have to try to allocate work to current staff members. About 90% of staff time is used to implement what is required by EPA and about 10% is discretionary time left to work on requests from the Board and other entities.
- Adams stated his opinion was that the ultimate goal was to remove products with intentionally added PFAS or contaminated with PFAS. He said the best way to capture information about them would be to regulate them as pesticides and get affidavits from the manufacturer stating what is in the product. Adams added that many products that do not contain adjuvants have labeling that requires conditioners and other adjuvants for application.
- Bryer asked if the water used in a pesticide mix would be considered an adjuvant.
- Adams replied that water was the wetting agent added into a dry flowable, so he would say that it is.

- Patterson stated that it might be useful to ask other states how they handle adjuvants as pesticides. Staff could find out if they require end-of-year use reporting, what level of reporting, specific storage requirements and any other applicable regulations.
- Board members agreed that would be helpful.
- Adams asked staff to send a memo to the legislature about the progress they have made.
- There was a discussion about durability standards and why barrier treatments were being used.
- Patterson asked the Board if the memo should include reference to federal laws that appear to preempt state regulation.
- The Board agreed.

4. Invasive Invertebrate List Discussion

At its August 5, 2022 meeting, the Board finally adopted a policy on invasive invertebrate pests on ornamental vegetation in outdoor residential landscapes that may be managed with neonicotinoids. Also at that time, Board members discussed amending the list and developing a revision schedule. Members proposed continuing the relevant conversation at a subsequent meeting.

Presentations By: Karla Boyd

Action Needed: Review/Discuss Provided Information, Determine Next Steps

- The Board did not have changes to the list at this time and plans to review the list annually in the spring. The Board decided that if there was an urgent need to amend the list they could call an emergency meeting.

5. Other Old and New Business

a. EPA Memo--EPA Analytical Chemistry Branch Laboratory Study of PFAS Leaching from Fluorinated HDPE Containers

b. Variance Permit Issued to Green Thumb Lawn Services—poison ivy in Eddington

c. Variance Permit Issued to Green Thumb Lawn Services—poison ivy in Glenburn

d. Variance Permit Issued to Green Thumb Lawn Services—poison ivy in Newagen

- Ianni inquired if staff asked applicants if there were alternative methods considered or implemented without success before chemical treatment was considered. She added that we might want to consider adding that to the permit application to implement IPM in the true fashion that the state has declared is the Board's goal. Ianni also suggested asking why there was a concern regarding the plants in the variance applications. For example, was there human contact, was the poison ivy on a very small parcel of land, or was there not another egress towards the water.
- Patterson stated that while it was not outlined in the policy staff does communicate to applicants other IPM methods for managing pests. They are also often directed to fact

sheets on GotPests? and from the Maine Natural Areas Program. Patterson stated that those items could certainly be added to policy by the Board at any time.

- There was further discussion about requirements for erosion control if the plants were close to the water's edge. Adams said he was comfortable asking variance applicants what other methods they tried in the spirit of IPM.

- Patterson stated that if the Board wanted to do so there was room to add language about requiring IPM methods and asking how much of a problem the pest is that the applicant is trying to control.

- Bryer asked if staff could have an explanation of what adequate reasons for control would be. She asked about invasives and how that fit into how the Board wanted to see the form and the process go.

- Ianni stated that if it was deemed by the customer that control was necessary then the first steps taken should be other means based in IPM and she wanted to make sure that IPM was included in the control method.

- Patterson stated that staff could certainly make it a standard practice to provide the IPM-based guidance that comes from the Department and has been vetted.

- Carlton mentioned that one example that comes to mind was with the large honeysuckle plants, leaning towards a cut-stump application rather than a foliar application.

e. Remote meeting policy

- Patterson suggested the Board may want to discuss reasons they would choose to meet remotely and went over the previously identified reasons for joining remotely. She noted that if they do have a hybrid meeting the Board needs to make that meeting equally accessible to folks online including their ability to participate and see the Board members.

- Randlett pointed out that the statute that controlled remote meeting policies was in Title 1 §403-B and Patterson had accurately described the requirements that pertain to public participation.

- Patterson asked if both public participation options needed to be offered if meetings are all remote or all in person.

- Randlett said the Board can have a policy that provides for remote meetings, but there needs to be a location for the public to attend and participate in person. The only exception is if there is an emergency meeting or other urgent situation in which the Board Chair makes a determination that it is essential for the Board to meet fully remotely, then the public may be limited to remote participation only.

f. Adopted--Policy on Emergency Permitting for Neonicotinoids Exemption

g. Adopted--Policy on Approved Invasive Invertebrate Pests on Ornamental Vegetation in Outdoor Residential Landscape

h. EPA Memo--EPA Proposes to Stop Authorized Use of Certain PFAS In Pesticide Products

i. Published Article—Targeted analysis and Total Oxidizable Precursor assay of several insecticides for PFAS

j. Maine Department of Environmental Protection Webpage: PFAS in Products

k. Other items?

- Adams asked about Raymond Connor's retirement after 42 years of state service.

- Patterson told the Board that staff was currently in the process of finding a replacement. She also mentioned that she believed someone had submitted an application to the Governor's Office Department of Boards and Commissions to apply to fill the position of Board member with a medical background. Patterson told the Board that several positions were coming up for re-appointment and that those decisions were made by a combination of efforts between the Governor's office and the legislature.

6. Schedule of Future Meetings

December 2, 2022, January 11, 2023, February 24, 2023, and April 7, 2023 are the next tentative Board meeting dates. The Board will decide whether to change and/or add dates.

7. Adjourn
    - **Carlton/Jemison: Moved and seconded to adjourn at 11:04 AM**
    - **In Favor: Unanimous**

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: Request to extend EPA Special Local Need [FIFRA, Section 24(c)] ME-170003 registration for 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: November 22, 2022

****

Dr. Lily Calderwood, Maine Cooperative Extension Blueberry Specialist, requests the Board approve a five year extension of SLN ME-170002 registration. The registration permits 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.

The total application rate on the container label and the SLN are the same for the non-bearing year, but the timing and number of applications is different. The 24(c) permits up to three applications per year at 2 oz/A per application. The application timing continues to prove effective in the control of weeds such as dogbane. In addition, one application during the bearing year prior to bloom at 4.0 fl oz/A to control or suppress a number of broadleaf weeds is also permitted. Callisto is the only Group 27 product on the UMaine Extension herbicide chart and is an important product used in rotation to reduce weed resistance.

In accordance with the Mesotrione Interim Registration Review Decision (December 2021) which is still under review at EPA. this label was revised to add the MOA number and a non-target organism advisory.

Your package includes the documents listed below for your review:

- Proposed SLN supplemental label
- Letter of support from Patricia Dinnen, Senior Regulatory Manager, Syngenta Crop Protection, Inc.
- Letter of request from Lily Calderwood. Ph.D., University of Maine Cooperative Extension
- Current container label
- Current EPA master label

The toxicological review by Dr. Pam Bryer is provided under separate cover.

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

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

Section 24(c) Special Local Need Label

MESOTRIONE	GROUP	27	HERBICIDE

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-170003

This label expires and must not be distributed or used in accordance with this SLN registration after December 31, 2027

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.

NON-TARGET ORGANISM ADVISORY: This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated site. Protect the forage and habitat of non-target organisms by following label directions intended to minimize spray drift.

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: ME1131021BA1122

November 16, 2022

Dear Maine Board of Pesticide Control,

On behalf of the University of Maine Cooperative Extension and lowbush (wild) blueberry producers in Maine, I request an extension of the 24C label for Callisto herbicide for use on broadleaf weeds in crop year wild blueberry fields. Our current 24C label which allows for crop year use in addition to the labeled prune year use will expire on December 31, 2022.

Callisto is used widely throughout the Maine wild blueberry industry by both large and small growers. It is currently a critical tool for broadleaf weed control in the prune year and we would like to continue the option of using Callisto in the crop year. As the 24C states, Callisto can only be used in the crop year before weeds reach 5 inches in height. With a 14 day pre-harvest interval, there is a clear mid-summer window during crop year wild blueberry production where this product could be used.

Broadleaf weeds compete with lowbush blueberry for nutrients, sunlight, and water. The successional habitat in which lowbush blueberry is grown exhibits the same conditions that favor certain broad leaf weeds. Through my Extension program, growers are encouraged to identify weeds in their fields and use cultural methods of weed management including sulfur application and mechanical weed removal before using chemical control. It is important to retain the use of this product because it fills an important rotational niche, reducing the risk of resistance development and offering another tool in the toolbox for growers to use. The UMaine Extension herbicide chart, which contains 21 products, only contains this one Group 27 product.

Sincerely,

Lily B. Calderwood

Dr. Lily Calderwood
University of Maine
Extension Wild Blueberry Specialist

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
Fax: 336 632 2884
pat.dinnen@syngenta.com

November 17, 2022

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: EPA SLN No. ME-170003
Callisto® Herbicide, EPA Reg. No. 100-1131
Request to Extend ME-170003 for an Additional Five Years

Dear Ms. Tomlinson:

Syngenta Crop Protection, LLC respectfully requests to renew ME-170003 for Callisto Herbicide for weed control in lowbush blueberry for an additional five years. Dr. Lily Calderwood, Extension Wild Blueberry Specialist at The University of Maine has written a letter of support explaining the need still exists for this special local need label.

A few minor changes have been made to this SLN label due to the EPA Mesotrione Interim Registration Review Decision (December 2021). The MOA Group Number and a Non-target Advisory statement have been added to the SLN label. The Mesotrione Interim Decision is still under review at EPA.

Enclosed in support of this submission are:

- Draft SLN Label
- Letter of support from Dr. Lily Calderwood of The University of Maine
- Current Callisto Herbicide Container Label
- Current EPA Master Label for Callisto Herbicide

If you have 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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

March 13, 2018

Amanda Foderaro
Regulatory Product Specialist, Herbicides
Syngenta Crop Protection, LLC
PO Box 18300
Greensboro, NC 27419

Subject: PRIA Label Amendment – Reducing RTI for Citrus Fruit Group 10-10, Pome Fruit Group 11-10, Stone Fruit Group 12-12, and Tree Nuts Group 14-12
Product Name: Callisto Herbicide
EPA Registration Number: 100-1131
Application Date: 08/10/2017
Decision Number: 532430

Dear Ms. Foderaro:

The amended label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, is acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance

with FIFRA section 6. If you have any questions, please contact Lisa Pahel by phone at (703) 347-0459, or via email at pahel.lisa@epa.gov.

Sincerely,

Erik Kraft, Product Manager 24
Fungicide and Herbicide Branch
Registration Division (7505P)
Office of Pesticide Programs

Enclosure: Summary of analytical chemistry and reside data dated 1/16/2018, DP#442304

[Booklet]

MESOTRIONE	GROUP	27	HERBICIDE

Callisto® Herbicide

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

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

Callisto® Herbicide is formulated as a suspension concentrate (SC) and 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.

EPA Reg. No. 100-1131

EPA Est.

Product of
Formulated in

Callisto Plant Technology®

SCP 1131

1 gallon
15 gallons
_____ gallons
Net Contents

ACCEPTED
03/13/2018
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 100-1131

[Batch Code: ____ (*For nonrefillables only.)*]

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 by mouth 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.

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 Controls

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 Herbicide 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 Herbicide. 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 Herbicide is not effective for the control of most grass weeds. Preemergence grass herbicides or postemergence grass herbicides can be tank mixed with Callisto Herbicide to provide broad spectrum weed control in corn (see appropriate section of label for this information). Callisto Herbicide can be applied postemergence following a preemergence grass herbicide application. Callisto Herbicide 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.

WEED RESISTANCE MANAGEMENT

MESOTRIONE	GROUP	27	HERBICIDE

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 Herbicide 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 Herbicide in corn, always use full labeled rates. If applying Callisto Herbicide 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 Herbicide). 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 Herbicide must be applied at full label rates to help prevent selection for, or population shifts toward, marginally resistant weed species and/or species biotypes.

Principles of Herbicide Resistant Weed Management

Scout and know your field

- Know weed species present in the field to be treated through scouting and field history. An understanding of weed biology is useful in designing a resistance management strategy. Ensure the weed management program will control all weeds present.
- Fields should be scouted prior to application to determine species present and growth stage. Always apply this herbicide at the full labeled rate and correct timing for the weeds present in the field.

Utilize non-herbicidal practices to add diversity

- Use diversified management tactics such as cover crops, mechanical weed control, harvest weed seed control, and crop rotation as appropriate.

Use good agronomic practices, start clean and stay clean

- Use good agronomic practices that enhance crop competitiveness.
- Plant into weed-free fields utilizing tillage or an effective burndown herbicide for control of emerged weeds.
- Sanitize farm equipment to avoid spreading seed or vegetative propagules prior to leaving fields.

Difficult to control weeds

- Fields with difficult to control weeds should be planted in rotation with crops that allow the use of herbicides with an alternative mode of action or different management practices.
- Difficult to control weeds may require sequential applications, such as a broad spectrum preemergence herbicide followed by one or more postemergence herbicide applications. Utilize herbicides containing different modes of action effective on the target weeds in sequential applications.

Do not overuse the technology

- Do not use more than two applications of this or any other herbicide with the same mode of action in a single growing season unless mixed with an herbicide with a different mode of action which provides overlapping spectrum for the difficult to control weeds.

Scout and inspect fields following application

- Prevent an influx of weeds into the field by controlling weeds in field borders.
- Scout fields after application to verify that the treatment was effective.
- Suspected- herbicide resistant weeds may be identified by these indicators
    - Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
    - A spreading patch of non-controlled plants of a particular weed species; and
    - Surviving plants mixed with controlled individuals of the same species.
- Report non-performance of this product to your Syngenta retailer, Syngenta representative, or call 1-866-Syngent (866-796-4368). If resistance is suspected ensure weed escapes are controlled using an herbicide with an effective mode of action and/or use non-chemical means to prevent further seed production.

Prevent weed escapes before, during, and after harvest

- Do not allow weed escapes to produce seed or vegetative structures such as tubers or stolons which contribute to spread and survival. Consider harvest

weed seed management and control weeds post-harvest to prevent seed production.

Resistant weeds

- Contact your local Syngenta representative, retailer, crop advisor or extension agent to determine if weeds resistant to this mode of action are present in your area. If resistant biotypes have been reported, use the full labeled rate of this product, apply at the labeled timing, and tank-mix with a different mode of action product so there are multiple effective modes of application for each suspected resistant weed.

USE RESTRICTIONS

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

Do not cultivate corn within 7 days before or after a Callisto Herbicide application as weed control from the Callisto Herbicide 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 Herbicide 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 Herbicide unless specified otherwise under the specific crop section on the label.

USE PRECAUTIONS

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

Severe corn injury resulting in yield loss may occur if Callisto Herbicide 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 Herbicide 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 Herbicide is made following label directions when weeds are actively growing.

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

SPRAY DRIFT MANAGEMENT

As with all crop protection products, it is important to avoid off-target movement onto adjacent land or crops, as even small amounts may injure sensitive plants. To reduce spray drift, the following spray drift management requirements must be followed.

SPRAY DRIFT
Ground Boom Applications

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy unless making a turf, pasture, or rangeland application, in which case applicators may apply with a nozzle height no more than 4 feet above the ground.
- For applications prior to the emergence of crops and target weeds, applicators are required to use a Coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a Medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size – Ground Boom

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.

- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

BOOM HEIGHT – Ground Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

TEMPERATURE AND HUMIDITY

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

WIND

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

WINDBLOWN SOIL PARTICLES

Callisto Herbicide has the potential to move off-site due to wind erosion. Soils that are

subject to wind erosion usually have a high silt and/or fine to very fine sand fractions and low organic matter content. Other factors which can affect the movement of windblown soil include the intensity and direction of prevailing winds, vegetative cover, site slope, rainfall, and drainage patterns. Avoid applying Callisto Herbicide if prevailing local conditions may be expected to result in off-site movement.

ADDITIONAL SPRAY DRIFT DIRECTIONS FOR AERIAL APPLICATIONS

The distance of the outer-most nozzles on the boom must not exceed ¾ 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 Herbicide 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 ¾ 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 Herbicide 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 gals.

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 Herbicide 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 Herbicide may be applied aerially for preemergence or postemergence weed control in corn only in the following states: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Nebraska, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Callisto Herbicide 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 Herbicide 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 Herbicide 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 HERBICIDE TANK MIXTURES FOR CORN section of this label, or unless permitted by a supplemental Callisto Herbicide 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 Herbicide label.

POSTEMERGENCE APPLICATIONS TO SWEET CORN AND YELLOW POPCORN

Do not add UAN or AMS when making postemergence applications of Callisto Herbicide 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 Herbicide 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. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

SPRAY EQUIPMENT

Cleaning Equipment After Callisto Herbicide 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 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 Herbicide 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. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions

for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Follow the mixing instructions for adding Callisto Herbicide 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 Herbicide. 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 Herbicide slowly and agitate until completely dissolved. Wait at least 1 minute after the last of the Callisto Herbicide has been added to the tank to allow for complete dispersion. A longer agitation period may be required to disperse Callisto Herbicide 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 Herbicide 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 Herbicide to actively growing weeds. Dry weather following preemergence application of Callisto Herbicide may reduce residual weed control effectiveness. If irrigation is available, apply ½ 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 Herbicide 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 Herbicide

Weed Common Name	Weed Scientific Name	Callisto Herbicide 3 fl oz/A	Callisto Herbicide 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
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

Weed Common Name	Weed Scientific Name	Callisto Herbicide 3 fl oz/A	Callisto Herbicide 2.5-3.0 fl oz/A + Atrazine[1]
		Apply to Weeds <5 Inches Tall[2]	
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 Herbicide 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 Herbicide

Common Name	Scientific Name	Callisto Herbicide Applied Alone	Callisto Herbicide + 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	C
Carpetweed	*Mollugo verticillata*	C	C
Carrot, wild	*Daucus carota*	C	C
Chickweed, common	*Stellaria media*	C	C
Chickweed, mouseear	*Cerastium vulgatum*	C	C
Cocklebur, common	*Xanthium strumarium*	PC	C
Crabgrass, large	*Digitaria sanguinalis*	PC	PC
Dandelion, common (seedling)	*Taraxacum officinale*	C	C
Deadnettle, purple	*Lamium purpureum*	C	C
Dock, curly	*Rumex crispus*	C	C
Eveningprimrose, cutleaf	*Oenothera laciniata*	C	C
Fiddleneck, coast	*Amsinckia intermedia*	C	C
Filaree, redstem	*Erodium cicutarium*	PC	C
Filaree, whitestem	*Erodium moschatum*	PC	C
Fleabane, hairy	*Conyza bonariensis*	C	C
Galinsoga	*Galinsoga parviflora*	C	C
Geranium, Carolina	*Geranium carolinianum*	C	C
Groundcherry, smooth	*Physalis subglabrata*	C	C
Groundsel, common	*Senecio vulgaris*	C	C
Henbit	*Lamium amplexicaule*	C	C
Horsenettle	*Solanum carolinense*	PC	PC
Horseweed/marestail	*Conyza canadensis*	C	C
Jimsonweed	*Datura stramonium*	C	C
Kochia	*Kochia scoparia*	PC	C
Lambsquarters, common	*Chenopodium album*	C	C
Lettuce, prickly	*Lactuca serriola*	C	C
Mallow, common	*Malva neglecta*	C	C
Mayweed, chamomile	*Anthemis cotula*	C	C
Morningglory, entireleaf	*Ipomoea hederacea*	PC	C

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

[1]Callisto Herbicide 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 Herbicide is applied as directed on this label, follow the crop rotation intervals in Table 3. If Callisto Herbicide is tank mixed with other products, follow the most restrictive product's crop rotation interval. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Table 3. Time Interval Between Callisto Herbicide 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
Cucurbits Dry beans Red clover	18 Months

Sugar beets All other rotational crops	

[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 Herbicide 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 Herbicide at 3 fl oz/A (0.094 lb ai/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 Herbicide may be applied by ground for preemergence or postemergence weed control in field corn, seed corn, yellow popcorn, and sweet corn.

Callisto Herbicide may also be applied aerially for preemergence or postemergence weed control only in the following states: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

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

Postemergence applications (after crop emergence) of Callisto Herbicide 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 Herbicide to yellow popcorn or sweet corn. Do not include nitrogen based adjuvants (UAN or AMS) when making postemergence applications of Callisto Herbicide 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 Herbicide per acre per year. Do not make more than 2 applications of Callisto Herbicide 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 Herbicide within 14 days of the first application.

Apply Callisto Herbicide 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 HERBICIDE USED ALONE – POSTEMERGENCE

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

Restrictions:

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

- Only one postemergence application may be made if Callisto Herbicide 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 Herbicide per year.

- Do not make the second application within 14 days of the first application.

- Application of Callisto Herbicide 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 Herbicide is applied postemergence to ground that received a

preemergence application of a mesotrione-containing herbicide, atrazine must be tank mixed with Callisto Herbicide.

- If atrazine is mixed with Callisto Herbicide, 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 HERBICIDE USED ALONE – PREEMERGENCE

Apply Callisto Herbicide 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 Herbicide may be tank mixed with preemergence grass herbicides for grass control. Refer to the tank mix section for a list of partners.

CALLISTO HERBICIDE TANK MIXTURES FOR CORN

Callisto Herbicide 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 Herbicide 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 Herbicide at 3.0 fl oz/A in tank mixes with Gramoxone® brands, glyphosate 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 Herbicide (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. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Preemergence Tank Mixtures in Corn

Callisto Herbicide 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 Herbicide and Callisto Herbicide plus AAtrex®

applied preemergence.

Table 4. Callisto Herbicide 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®		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 Herbicide 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 Herbicide at less than 3.0 fl oz/A. Application of Callisto Herbicide 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 Herbicide 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.

Tank Mix Partners[1]	Directions
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.
Glyphosate-only brands, excludes premixed products containing glyphosate	• For use only in Agrisure® GT or Roundup Ready® corn. • Application of this mixture to a corn hybrid that does not contain the Agrisure GT or Roundup Ready trait 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.
Ignite® Ignite® 280 SL	• Use this tank mixture only on corn designated as LibertyLink®. • Application of this mixture to a corn hybrid that does not contain the LibertyLink trait 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®. • Application of this mixture to a corn hybrid that does not contain the Clearfield trait 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.

Tank Mix Partners[1]	Directions
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.

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

ASPARAGUS

Callisto Herbicide 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 Herbicide 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 Herbicide 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 (0.24 lb ai/A) of Callisto Herbicide per year.

2. Do not make more than two Callisto Herbicide applications per year.

3. Do not make the second application within 14 days of the first application.

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

Callisto Herbicide can be applied to bluegrass, annual ryegrass, perennial ryegrass, or tall fescue which is grown for seed. Callisto Herbicide 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 Herbicide as a broadcast, surface spray at a rate of 6.0 fl oz/A to a newly seeded crop. The Callisto Herbicide 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 Herbicide. 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 Herbicide applied preemergence will control mannagrass.

Postemergence Application: Apply Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide postemergence may increase the risk of crop injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Callisto Herbicide 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 Herbicide.

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 Herbicide.

3. Do not make more than two applications of Callisto Herbicide per year.

4. Do not make the second application within 14 days of the first application.

5. Do not apply more than 6 fl oz/A (0.19 lb ai/A) in a single application and not more than 9 fl oz/A (0.282 lb ai/A) of Callisto Herbicide per year.

6. Applications of Callisto Herbicide to grasses grown for seed species not listed on this label may result in severe injury.

BUSH AND CANEBERRIES (CROP GROUP 13-07A and 13-07B)

Note: Not all cultivars and types of berries that are included within the Environmental Protection Agencies definition of bush and caneberries (Crop Subgroups 13-07A and 13-07B) have been tested and shown to have adequate crop safety to Callisto Herbicide. Those that have been tested, and are believed to be reasonably fit, are listed below along with use directions for that crop. If Callisto Herbicide is used on bush or caneberries not listed below, severe crop injury may occur.

Callisto Herbicide 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 Herbicide 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.and 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 bush or caneberry leaves.

In low bush blueberries, Callisto Herbicide may only be applied in the non-bearing year. This application may be a broadcast application. Up to 6 fl oz/A of Callisto Herbicide 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. The use of a crop oil concentrate (COC) type adjuvant at 1% v/v is recommended. Applications of Callisto Herbicide during dry weather conditions and/or temperatures above 85° can cause injury to Lowbush blueberries. Applications of Callisto Herbicide can cause yellowing or necrosis of leaves and under severe conditions, leaf drop may occur especially on “Sourtop” variety blueberries.

Restrictions:

1. Do not make more than two applications of Callisto Herbicide per year.

2. Do not apply more than 6 fl oz/A (0.19 lb ai/A) of Callisto Herbicide per year.

3. If two applications are made, they must be made no closer than 14 days apart.

4. Do not apply Callisto Herbicide to bush or caneberries after the onset of the bloom stage or illegal residues may occur.

CITRUS FRUIT, POME FRUIT, STONE FRUIT AND TREE NUTS (CROP GROUP 10-10, 11-10, 12-12 AND 14-12)

Callisto Herbicide may be used for postemergence and residual control of weeds listed in Tables 1 and 2 in the following crops.

Citrus fruit (Australian desert lime, Australian finger lime, Australian round lime, Brown River finger lime, calamondin, citron, citrus hybrids, grapefruit, Japanese summer grapefruit, kumquat, lemon, lime, Mediterranean mandarin, sour orange, sweet orange, pummelo, Russell River lime, Satsuma mandarin, sweet lime, Tachibana orange, Tahiti lime, tangelo, tangerine (Mandarin), tangor, trifoliate orange, uniq fruit, cultivars, varieties and/or hybrids of these)

Pome fruit (apple, azarole, crabapple, loquat, mayhaw, medlar, pear, Asian pear, quince, Chinese quince, Japanese quince, tejocote, cultivars, varieties and/or hybrids of these)

Stone fruit (apricot, Japanese apricot, capulin, black cherry, Nanking cherry, sweet cherry, tart cherry, Chinese jujube, nectarine, peach, plum, American plum, beach plum, Canada plum, cherry plum, Chickasaw plum, Damson plum, Japanese plum, Klamath plum, prune plum, plumcot, sloe, cultivars, varieties and/or hybrids of these)

Tree nuts (African nut-tree, almond, beech nut, Brazil nut, Brazilian pine, bunya, bur oak, butternut, Cajou nut, candlenut, cashew, chestnut, chinquapin, coconut, Coquito nut, Dika nut, ginkgo, Guiana chestnut, hazelnut (filbert), heartnut, hickory nut, Japanese horse-chestnut, macadamia nut, Mongongo nut, monkey-pot, monkey puzzle nut, Okari nut, Pachira nut, peach palm nut, pecan, pequi, pili nut, pine nut, pistachio, Sapucaia nut, tropical almond, black walnut, English walnut, yellowhorn, cultivars, varieties and/or hybrids of these)

Precautions

1. To avoid crop injury, apply the spray to the grove or orchard floor and to the weeds, avoiding contact with crop foliage, stems or fruit. Contact of Callisto Herbicide with the crop may result in bleaching injury that is typically temporary. Use trunk guards to protect plants until adequate bark has developed.

2. Specified rates are based on broadcast treatment. For band applications around trees in fruit or nut plantings, reduce the broadcast rate of Callisto Herbicide and carrier per acre in proportion to the area actually sprayed. (See Banded Applications Section.)

3. Application of Callisto Herbicide in nectarine, plum or tree nuts grown in coarse soils may cause bleaching, especially when applied during time of heavy water use and root growth such as during bud break or rapid shoot expansion.

Restrictions

1. Callisto Herbicide can only be applied in pome fruit, stone fruit and nut trees that have been established for one full growing season and are in good health and vigor. Callisto Herbicide can be applied in citrus trees or citrus tree plantings that are less than 12 months old and are exhibiting normal growth and vigor.

2. Do not apply in orchards that are stressed due to poor weather or other abiotic factors.

3. Do not exceed a total of 12 fl oz per acre (0.376 lb ai/A) of Callisto Herbicide per year or in a 12-month period.

4. Do not exceed 6 fl oz per acre (0.19 lb ai/A) of Callisto Herbicide for the first application.

5. Do not exceed 3 applications per year or in a 12-month period.

6. Allow at least 12 weeks between applications of Callisto Herbicide at 6 fl oz/A and at least 6 weeks between applications of 6 fl oz/A and subsequent applications of 3 fl oz/A. (Applications must follow one of the four programs listed in Table 6 below.)

7. Do not harvest pome fruit, stone fruit or tree nuts within 30 days after application.

8. Do not harvest citrus fruit within 1 day after application.

9. Do not use on soils with greater than 20% gravel.

10. Do not apply Callisto Herbicide through any type of irrigation system.

11. Do not apply Callisto Herbicide by air.

Spray Additives

For application to emerged weeds, the use of crop oil concentrate (COC) type adjuvant at 1% v/v or non-ionic surfactant (NIS) at 0.25% v/v is recommended. Addition of ammonium sulfate or other nitrogen-based adjuvants will increase efficacy when used in combination with COC or NIS. For more information see Spray Additives section on this label.

Banded Applications

When applying a row or banded treatment of Callisto Herbicide, the following formula may be used to calculate the amount per acre:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{Amount needed per acre of field}$$

Tank Mix Instructions

Callisto Herbicide may be mixed and applied in combination with most commonly used herbicides registered for use in the approved crops in order to expand the postemergence (Gramoxone brands, glyphosate brands, Rely® 280 or GoalTender®) or residual (Princep®, Solicam®, Matrix®, Surflan®, GoalTender, Prowl H_2O, Karmex®, Hyvar®, Krovar® or Alion®) weed control spectrum. These tank mixtures can be used to help control or manage the development of resistant weeds. The application of mixtures or sequences of effective herbicides, with different sites of action, can provide the diversity needed for management of herbicide resistance.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Weed Control (Table 1 and 2)

Callisto Herbicide provides both postemergence and preemergence control of susceptible weeds. Best control is obtained if postemergence applications are made before weeds reach 5 inches in height (Table 1) or before germination of seed for preemergence control (Table 2). Rainfall or irrigation soon after application will enhance preemergence activity.

Use Directions

Apply as a directed or shielded spray. Avoid contact with trunk surfaces, fruit or crop foliage. Do not apply when nuts or fruits are on the ground at harvest. Ensure that the soil is settled, firm and relatively free of debris at time of application. Also ensure that the soil is free of depressions around trees where rain or irrigation water can concentrate. Apply the first application of Callisto Herbicide in late fall/early winter or spring and subsequent applications utilizing one of the programs noted in the Table 6.

Table 6. Callisto Herbicide Application Programs, Rates and Intervals

	Application Rate (fl oz/A)	Application

Program	1st Application	2nd Application	3rd Application	Interval (wk)
1	6	6	-	12
2	6	3	-	6
3	6	3	3	6
4	3	3	3	6

For optimum postemergence weed control, apply Callisto Herbicide to actively growing weeds in tank mixture with burndown herbicides such as: Gramoxone brands, glyphosate brands, Rely 280 or GoalTender before weeds exceed 5 inches in height.

For effective residual weed control, Callisto Herbicide must be moved into the weed seed germination zone. For preemergence weed control, apply Callisto Herbicide before rainfall or irrigation. For optimum residual control Callisto Herbicide can be tank mixed with herbicides such as: Princep, Solicam, Matrix, Goal Tender, Prowl, Karmex, Hyvar, Krovar or Alion, where approved for use.

Subsequent application(s) of Callisto Herbicide can be made alone or in tank mixture, with the herbicides noted above, if weed emergence occurs.

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

Apply Callisto Herbicide in a spray volume of 10-40 gal/A.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

CRANBERRY

Callisto Herbicide may be applied at a rate up to 8 fl oz/A 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. 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 Herbicide 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 Herbicide application(s) after the bud break stage, but not less than 45 days prior to flooding or harvest.

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

Restrictions:

1. Do not make more than two applications of Callisto Herbicide per year.

2. Do not apply more than 16 fl oz/A (0.5 lb ai/A) in total per year.

3. If two applications are made, they must be made no closer than 14 days apart.

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 specified 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 directions, if application is being made during a normal irrigation set of a stationary sprinkler, the specified 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 Directions – 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 Herbicide 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. 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 Herbicide to emerged flax can result in severe crop injury.

Restrictions:

1. Do not make more than one application of Callisto Herbicide per year.

2. Do not apply more than 6 fl oz/A (0.19 lb ai/A) per year in flax.

OATS

Callisto Herbicide 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 Herbicide broadcast at a rate of 6.0 fl oz/A prior to oat emergence. For best preemergence weed control, the Callisto Herbicide 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 Herbicide at a rate of 3.0 fl oz/A. For best results, Callisto Herbicide must be applied to emerged weeds that are less than 5” tall. Postemergence applications of Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide postemergence may increase the risk of injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Callisto Herbicide 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 Herbicide.

2. Do not harvest oats within 50 days following the application of Callisto Herbicide.

3. Do not make more than one application of Callisto Herbicide per year.

4. Do not apply Callisto Herbicide preemergence (prior to oat emergence) at more than 6.0 fl oz/A (0.19 lb ai/A) per year.

5. Do not apply Callisto Herbicide postemergence at more than 3.0 fl oz/A (0.094 lb ai/A) per year.

6. If the oat crop treated with Callisto Herbicide is lost or destroyed, oats may be replanted immediately. If Callisto Herbicide was applied to the lost oat crop, no additional Callisto Herbicide can be applied to the replanted oat crop.

OKRA

Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide that contacts the okra foliage or crop injury will occur. For best postemergence results, Callisto Herbicide must be applied to actively growing weeds.

Restrictions:

1. Do not harvest okra within 28 days following the application of Callisto Herbicide.

2. Do not make more than one application of Callisto Herbicide per year.

3. Do not apply Callisto Herbicide as a row-middle application at more than 6.0 fl oz/A (0.19 lb ai/A) per year.

4. Do not apply Callisto Herbicide as a post-directed application at more than 3.0 fl oz/A (0.094 lb ai/A) per year.

5. Do not apply Callisto Herbicide as a broadcast preemergence or broadcast postemergence application to okra or severe injury will occur.

6. If the okra crop treated with Callisto Herbicide is lost or destroyed, okra can be replanted only in the soil band that was not treated with Callisto Herbicide.

PEARL MILLET

Callisto Herbicide 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. 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 Herbicide to emerged pearl millet can result in severe crop injury.

Restrictions:

1. Do not make more than one application of Callisto Herbicide per year.

2. Do not apply more than 6 fl oz/A (0.19 lb ai/A) per year.

RHUBARB

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

Apply Callisto Herbicide 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 Herbicide to rhubarb that is not dormant may result in a temporary bleaching symptomology. Rainfall or irrigation after the Callisto Herbicide application may increase the risk of injury to emerging rhubarb.

Restrictions:

1. Do not harvest rhubarb within 21 days following the application of Callisto Herbicide.

2. Do not make more than one application of Callisto Herbicide per year.

3. Do not apply Callisto Herbicide at more than 6.0 fl oz/A (0.19 lb ai/A) per year.

SORGHUM (GRAIN AND SWEET)

Preemergence Application: Callisto Herbicide 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 Herbicide preemergence at a rate of 6.0-6.4 fl oz/A as a broadcast non-incorporated application prior to sorghum emergence. Applying Callisto Herbicide 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 Herbicide more than 7 days (but not more than 21) prior to planting will reduce the risk of crop injury.

If Callisto Herbicide 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 (0.2 lb ai/A) of Callisto Herbicide per year.

2. Do not make more than one application of Callisto Herbicide per year.

3. Do not apply Callisto Herbicide to emerged sorghum or severe crop injury may occur.

4. Do not use Callisto Herbicide in the production of forage sorghum, sudangrass, sorghum-sudangrass hybrids, or dual purpose sorghum.

5. Do not apply Callisto Herbicide to sorghum that is grown on coarse textured soils (e.g. sandy loam, loamy sand, sand).

6. In the State of Texas, do not apply Callisto Herbicide to sorghum grown south of Interstate 20 (I-20) or east of Highway 277.

Post-Directed: Callisto Herbicide 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 Herbicide to actively growing weeds.

Apply Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide.

2. Do not apply more than 3.0 fl oz/A (0.094 lb ai/A) of Callisto Herbicide post-directed and not more than 6.4 fl oz/A (0.2 lb ai/A) of Callisto Herbicide per year.

3. Do not apply Callisto Herbicide 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 Herbicide after the sorghum seedhead has begun to emerge.

7. Do not use Callisto Herbicide in the production of forage sorghum, sudangrass, or sorghum-sudangrass hybrids.

SOYBEAN

Callisto Herbicide can be applied preemergence to soybeans that are identified as mesotrione tolerant. Applications to soybeans that are not mesotrione tolerant will result in significant crop injury. For a list of mesotrione tolerant soybean varieties, contact a Syngenta Technical Representative.

Preemergence Application: For preemergence control of the weeds listed in Table 2, apply Callisto Herbicide prior to soybean emergence at a rate of 6.0 fl oz/A. Apply the higher rate for longer residual control. Callisto Herbicide may be tank mixed with other registered soybean herbicides such as Dual Magnum®, Dual II Magnum, and Prefix®. Refer to the tank mix partner label and follow all precautions and restrictions.

If weeds are emerged at the time of application, add either a non-ionic surfactant (NIS) at 1 qt/100 gallons (0.25% v/v) or a crop oil concentrate (COC) at 1 gallon/100 gallons (1% v/v). In addition to NIS or COC, it is also recommended to add either ammonium sulfate (AMS) at 8.5-17 lb/100 gallon (or equivalent).

Restrictions:

1. Apply no more than 6.0 fl oz/A (0.19 lb ai/A) per year.

2. Do not make more than one application of Callisto Herbicide per year.

3. Do not apply Callisto Herbicide to emerged soybeans.

4. Do not graze or feed soybean forage or hay to livestock.

SUGARCANE

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

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

Preemergence Applications: Apply Callisto Herbicide 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 Herbicide. Refer to the tank mix partner label for specific rates and use directions. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Postemergence Applications: Apply Callisto Herbicide 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 Herbicide 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 Herbicide 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 (0.24 lb ai/A) of Callisto Herbicide as a preemergence application.

2. Do not apply more than 3.0 fl oz/A (0.094 lb ai/A) of Callisto Herbicide in a postemergence application.

3. Do not make more than two applications of Callisto Herbicide per year. If a preemergence application of Callisto Herbicide is made, only one postemergence application is allowed.

4. Do not make the second application within 14 days of the first application.

5. Do not apply more than 10.7 fl oz/A (0.334 lb ai/A) of Callisto Herbicide per year.

6. Do not harvest sugarcane within 114 days following a post-over-the-top application of Callisto Herbicide (114 day PHI).

7. Do not harvest sugarcane within 100 days following a post-directed application of Callisto Herbicide (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 ¼ 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]

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 ¼ 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.

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.

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

Callisto Herbicide 1131 MAS 0515 AMEND-E 0817-CL – kdy – 3/12/18
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MESOTRIONE | GROUP 27 HERBICIDE

PULL HERE TO OPEN

Callisto® Herbicide

syngenta®

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

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

Callisto® Herbicide is formulated as a suspension concentrate (SC) and 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 China
Formulated in the USA

SCP 1131A-L1R 0318
4134013

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 by mouth 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 Controls

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 Herbicide 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 Herbicide. 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 Herbicide is not effective for the control of most grass weeds. Preemergence grass herbicides or postemergence grass herbicides can be tank mixed with Callisto Herbicide to provide broad spectrum weed control in corn (see appropriate section of label for this information). Callisto Herbicide can be applied postemergence following a preemergence grass herbicide application. Callisto Herbicide 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.

WEED RESISTANCE MANAGEMENT

MESOTRIONE	GROUP	27	HERBICIDE

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 Herbicide 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 Herbicide in corn, always use full labeled rates. If applying Callisto Herbicide 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 Herbicide). 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 Herbicide must be applied at full label rates to help prevent selection for, or population shifts toward, marginally resistant weed species and/or species biotypes.

Principles of Herbicide Resistant Weed Management

Scout and know your field

- Know weed species present in the field to be treated through scouting and field history. An understanding of weed biology is useful in designing a resistance management strategy. Ensure the weed management program will control all weeds present.
- Fields should be scouted prior to application to determine species present and growth stage. Always apply this herbicide at the full labeled rate and correct timing for the weeds present in the field.

Utilize non-herbicidal practices to add diversity

- Use diversified management tactics such as cover crops, mechanical weed control, harvest weed seed control, and crop rotation as appropriate.

Use good agronomic practices, start clean and stay clean

- Use good agronomic practices that enhance crop competitiveness.
- Plant into weed-free fields utilizing tillage or an effective burndown herbicide for control of emerged weeds.
- Sanitize farm equipment to avoid spreading seed or vegetative propagules prior to leaving fields.

Difficult to control weeds

- Fields with difficult to control weeds should be planted in rotation with crops that allow the use of herbicides with an alternative mode of action or different management practices.
- Difficult to control weeds may require sequential applications, such as a broad spectrum preemergence herbicide followed by one or more postemergence herbicide applications. Utilize herbicides containing different modes of action effective on the target weeds in sequential applications.

Do not overuse the technology

- Do not use more than two applications of this or any other herbicide with the same mode of action in a single growing season unless mixed with an herbicide with a different mode of action which provides overlapping spectrum for the difficult to control weeds.

Scout and inspect fields following application

- Prevent an influx of weeds into the field by controlling weeds in field borders.
- Scout fields after application to verify that the treatment was effective.

- Suspected- herbicide resistant weeds may be identified by these indicators
  - Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
  - A spreading patch of non-controlled plants of a particular weed species; and
  - Surviving plants mixed with controlled individuals of the same species.
- Report non-performance of this product to your Syngenta retailer, Syngenta representative, or call 1-866-Syngenta (866-796-4368). If resistance is suspected ensure weed escapes are controlled using an herbicide with an effective mode of action and/or use non-chemical means to prevent further seed production.

Prevent weed escapes before, during, and after harvest

- Do not allow weed escapes to produce seed or vegetative structures such as tubers or stolons which contribute to spread and survival. Consider harvest weed seed management and control weeds post-harvest to prevent seed production.

Resistant weeds

- Contact your local Syngenta representative, retailer, crop advisor or extension agent to determine if weeds resistant to this mode of action are present in your area. If resistant biotypes have been reported, use the full labeled rate of this product, apply at the labeled timing, and tank-mix with a different mode of action product so there are multiple effective modes of application for each suspected resistant weed.

USE RESTRICTIONS

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

Do not cultivate corn within 7 days before or after a Callisto Herbicide application as weed control from the Callisto Herbicide 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 Herbicide 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 Herbicide unless specified otherwise under the specific crop section on the label.

USE PRECAUTIONS

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

Severe corn injury resulting in yield loss may occur if Callisto Herbicide 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 Herbicide 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 Herbicide is made following label directions when weeds are actively growing.

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

SPRAY DRIFT MANAGEMENT

As with all crop protection products, it is important to avoid off-target movement onto adjacent land or crops, as even small amounts may injure sensitive plants. To reduce spray drift, the following spray drift management requirements must be followed.

SPRAY DRIFT
Ground Boom Applications

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy unless making a turf, pasture, or rangeland application, in which case applicators may apply with a nozzle height no more than 4 feet above the ground.
- For applications prior to the emergence of crops and target weeds, applicators are required to use a Coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a Medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.
BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size – Ground Boom

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

BOOM HEIGHT – Ground Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

TEMPERATURE AND HUMIDITY

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

WIND

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

WINDBLOWN SOIL PARTICLES

Callisto Herbicide has the potential to move off-site due to wind erosion. Soils that are subject to wind erosion usually have a high silt and/or fine to very fine sand fractions and low organic matter content. Other factors which can affect the movement of windblown soil include the intensity and direction of prevailing winds, vegetative cover, site slope, rainfall, and drainage patterns. Avoid applying Callisto Herbicide if prevailing local conditions may be expected to result in off-site movement.

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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 HERBICIDE TANK MIXTURES FOR CORN section of this label, or unless permitted by a supplemental Callisto Herbicide 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 Herbicide label.

POSTEMERGENCE APPLICATIONS TO SWEET CORN AND YELLOW POPCORN

Do not add UAN or AMS when making postemergence applications of Callisto Herbicide 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 Herbicide 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. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

SPRAY EQUIPMENT

Cleaning Equipment After Callisto Herbicide 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 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 Herbicide 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. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Follow the mixing instructions for adding Callisto Herbicide 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 Herbicide. 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 Herbicide slowly and agitate until completely dissolved. Wait at least 1 minute after the last of the Callisto Herbicide has been added to the tank to allow for complete dispersion. A longer agitation period may be required to disperse Callisto Herbicide 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 Herbicide 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 Herbicide to actively growing weeds. Dry weather following preemergence application of Callisto Herbicide 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 Herbicide 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 Herbicide

Weed Common Name	Weed Scientific Name	Callisto Herbicide 3 fl oz/A	Callisto Herbicide 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

continued...

Table 1. Weeds Controlled With Postemergence Applications of Callisto Herbicide *(continued)*

Weed Common Name	Weed Scientific Name	Callisto Herbicide 3 fl oz/A	Callisto Herbicide 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 Herbicide 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 Herbicide

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

continued...

Table 2. Weeds Controlled With Preemergence Applications of Callisto Herbicide *(continued)*

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

[1]Callisto Herbicide 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 Herbicide is applied as directed on this label, follow the crop rotation intervals in Table 3. If Callisto Herbicide is tank mixed with other products, follow the most restrictive product's crop rotation interval. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Table 3. Time Interval Between Callisto Herbicide 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

continued...

Table 3. Time Interval Between Callisto Herbicide Application and Replanting or Planting of Rotational Crop *(continued)*

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 Herbicide 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 Herbicide at 3 fl oz/A (0.094 lb ai/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 Herbicide may be applied by ground for preemergence or postemergence weed control in field corn, seed corn, yellow popcorn, and sweet corn.

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

Postemergence applications (after crop emergence) of Callisto Herbicide 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 Herbicide to yellow popcorn or sweet corn. Do not include nitrogen based adjuvants (UAN or AMS) when making postemergence applications of Callisto Herbicide 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 Herbicide per acre per year. Do not make more than 2 applications of Callisto Herbicide 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 Herbicide within 14 days of the first application.

Apply Callisto Herbicide 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 HERBICIDE USED ALONE – POSTEMERGENCE

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

Restrictions:

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

- Only one postemergence application may be made if Callisto Herbicide 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 Herbicide per year.
- Do not make the second application within 14 days of the first application.
- Application of Callisto Herbicide 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 Herbicide is applied postemergence to ground that received a preemergence application of a mesotrione-containing herbicide, atrazine must be tank mixed with Callisto Herbicide.
- If atrazine is mixed with Callisto Herbicide, 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 HERBICIDE USED ALONE – PREEMERGENCE

Apply Callisto Herbicide 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 Herbicide may be tank mixed with preemergence grass herbicides for grass control. Refer to the tank mix section for a list of partners.

CALLISTO HERBICIDE TANK MIXTURES FOR CORN

Callisto Herbicide 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 Herbicide 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 Herbicide at 3.0 fl oz/A in tank mixes with Gramoxone® brands, glyphosate 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 Herbicide (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. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Preemergence Tank Mixtures in Corn

Callisto Herbicide 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 Herbicide and Callisto Herbicide plus AAtrex® applied preemergence.

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

AAtrex	Cinch® ATZ Lite	Guardsman Max®	Keystone® LA
Bicep Lite II Magnum®	Degree®	Harness®	Outlook®
Bicep II Magnum®	Degree Xtra®	Harness Xtra®	Prowl®
Cinch®	Dual II Magnum®	Harness Xtra® 5.6L	Surpass® EC
Cinch® ATZ	Fultime®	Keystone®	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 Herbicide 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 Herbicide at less than 3.0 fl oz/A. Application of Callisto Herbicide 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 Herbicide Tank Mixtures for Postemergence Application in Corn

TankMix 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.

continued…

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

TankMix Partners[1]	Directions
Glyphosate-only brands, excludes premixed products containing glyphosate	• For use only in Agrisure® GT or Roundup Ready® corn. • Application of this mixture to a corn hybrid that does not contain the Agrisure GT or Roundup Ready trait 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.
Ignite® Ignite® 280 SL	• Use this tank mixture only on corn designated as LibertyLink®. • Application of this mixture to a corn hybrid that does not contain the LibertyLink trait 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®. • Application of this mixture to a corn hybrid that does not contain the Clearfield trait 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.

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

ASPARAGUS

Callisto Herbicide 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 Herbicide 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 Herbicide 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 (0.24 lb ai/A) of Callisto Herbicide per year.
2. Do not make more than two Callisto Herbicide applications per year.
3. Do not make the second application within 14 days of the first application.

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

Callisto Herbicide 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 Herbicide 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. 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.

In low bush blueberries, Callisto Herbicide may only be applied in the non-bearing year. This application may be a broadcast application. Up to 6 fl oz/A of Callisto Herbicide 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. The use of a crop oil concentrate (COC) type adjuvant at 1% v/v is recommended. Applications of Callisto Herbicide during dry weather conditions and/or temperatures above 85° can cause injury to Lowbush blueberries. Applications of Callisto Herbicide can cause yellowing or necrosis of leaves and under severe conditions, leaf drop may occur especially on "Sourtop" variety blueberries.

Restrictions:

1. Do not make more than two applications of Callisto Herbicide per year.
2. Do not apply more than 6 fl oz/A (0.19 lb ai/A) of Callisto Herbicide per year.
3. If two applications are made, they must be made no closer than 14 days apart.
4. Do not apply Callisto Herbicide to bush or caneberries after the onset of the bloom stage or illegal residues may occur.

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

Callisto Herbicide can be applied to bluegrass, annual ryegrass, perennial ryegrass, or tall fescue which is grown for seed. Callisto Herbicide 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 Herbicide as a broadcast, surface spray at a rate of 6.0 fl oz/A to a newly seeded crop. The Callisto Herbicide 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 Herbicide. 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 Herbicide applied preemergence will control mannagrass.

Postemergence Application: Apply Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide postemergence may increase the risk of crop injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Callisto Herbicide 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 Herbicide.
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 Herbicide.
3. Do not make more than two applications of Callisto Herbicide per year.
4. Do not make the second application within 14 days of the first application.
5. Do not apply more than 6 fl oz/A (0.19 lb ai/A) in a single application and not more than 9 fl oz/A (0.282 lb ai/A) of Callisto Herbicide per year.
6. Applications of Callisto Herbicide to grasses grown for seed species not listed on this label may result in severe injury.

CRANBERRY

Callisto Herbicide may be applied at a rate up to 8 fl oz/A 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. 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 Herbicide 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 Herbicide application(s) after the bud break stage, but not less than 45 days prior to flooding or harvest.

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

Restrictions:

1. Do not make more than two applications of Callisto Herbicide per year.
2. Do not apply more than 16 fl oz/A (0.5 lb ai/A) in total per year.
3. If two applications are made, they must be made no closer than 14 days apart.

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 specified 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 directions, if application is being made during a normal irrigation set of a stationary sprinkler, the specified 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 Directions – 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 Herbicide 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. 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 Herbicide to emerged flax can result in severe crop injury.

Restrictions:

1. Do not make more than one application of Callisto Herbicide per year.
2. Do not apply more than 6 fl oz/A (0.19 lb ai/A) per year in flax.

OATS

Callisto Herbicide 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 Herbicide broadcast at a rate of 6.0 fl oz/A prior to oat emergence. For best preemergence weed control, the Callisto Herbicide 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 Herbicide at a rate of 3.0 fl oz/A. For best results, Callisto Herbicide must be applied to emerged weeds that are less than 5" tall. Postemergence applications of Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide postemergence may increase the risk of injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Callisto Herbicide 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 Herbicide.
2. Do not harvest oats within 50 days following the application of Callisto Herbicide.
3. Do not make more than one application of Callisto Herbicide per year.
4. Do not apply Callisto Herbicide preemergence (prior to oat emergence) at more than 6.0 fl oz/A (0.19 lb ai/A) per year.
5. Do not apply Callisto Herbicide postemergence at more than 3.0 fl oz/A (0.094 lb ai/A) per year.
6. If the oat crop treated with Callisto Herbicide is lost or destroyed, oats may be replanted immediately. If Callisto Herbicide was applied to the lost oat crop, no additional Callisto Herbicide can be applied to the replanted oat crop.

OKRA

Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide 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 Herbicide that contacts the okra foliage or crop injury will occur. For best postemergence results, Callisto Herbicide must be applied to actively growing weeds.

Restrictions:

1. Do not harvest okra within 28 days following the application of Callisto Herbicide.
2. Do not make more than one application of Callisto Herbicide per year.
3. Do not apply Callisto Herbicide as a row-middle application at more than 6.0 fl oz/A (0.19 lb ai/A) per year.
4. Do not apply Callisto Herbicide as a post-directed application at more than 3.0 fl oz/A (0.094 lb ai/A) per year.
5. Do not apply Callisto Herbicide as a broadcast preemergence or broadcast postemergence application to okra or severe injury will occur.
6. If the okra crop treated with Callisto Herbicide is lost or destroyed, okra can be replanted only in the soil band that was not treated with Callisto Herbicide.

PEARL MILLET

Callisto Herbicide 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. 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 Herbicide to emerged pearl millet can result in severe crop injury.

Restrictions:

1. Do not make more than one application of Callisto Herbicide per year.
2. Do not apply more than 6 fl oz/A (0.19 lb ai/A) per year.

RHUBARB

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

Apply Callisto Herbicide 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 Herbicide to rhubarb that is not dormant may result in a temporary bleaching symptomology. Rainfall or irrigation after the Callisto Herbicide application may increase the risk of injury to emerging rhubarb.

Restrictions:

1. Do not harvest rhubarb within 21 days following the application of Callisto Herbicide.
2. Do not make more than one application of Callisto Herbicide per year.
3. Do not apply Callisto Herbicide at more than 6.0 fl oz/A (0.19 lb ai/A) per year.

SORGHUM (GRAIN AND SWEET)

Preemergence Application: Callisto Herbicide 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 Herbicide preemergence at a rate of 6.0–6.4 fl oz/A as a broadcast non-incorporated application prior to sorghum emergence. Applying Callisto Herbicide 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 Herbicide more than 7 days (but not more than 21) prior to planting will reduce the risk of crop injury.

If Callisto Herbicide 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 (0.2 lb ai/A) of Callisto Herbicide per year.
2. Do not make more than one application of Callisto Herbicide per year.
3. Do not apply Callisto Herbicide to emerged sorghum or severe crop injury may occur.
4. Do not use Callisto Herbicide in the production of forage sorghum, sudangrass, sorghum-sudangrass hybrids, or dual purpose sorghum.

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

Post-Directed: Callisto Herbicide 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 Herbicide to actively growing weeds.

Apply Callisto Herbicide 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 Herbicide 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 Herbicide 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 Herbicide.
2. Do not apply more than 3.0 fl oz/A (0.094 lb ai/A) of Callisto Herbicide post-directed and not more than 6.4 fl oz/A (0.2 lb ai/A) of Callisto Herbicide per year.
3. Do not apply Callisto Herbicide 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 Herbicide after the sorghum seedhead has begun to emerge.
7. Do not use Callisto Herbicide in the production of forage sorghum, sudangrass, or sorghum-sudangrass hybrids.

SOYBEAN

Callisto Herbicide can be applied preemergence to soybeans that are identified as mesotrione tolerant. Applications to soybeans that are not mesotrione tolerant will result in significant crop injury. For a list of mesotrione tolerant soybean varieties, contact a Syngenta Technical Representative.

Preemergence Application: For preemergence control of the weeds listed in Table 2, apply Callisto Herbicide prior to soybean emergence at a rate of 6.0 fl oz/A. Apply the higher rate for longer residual control. Callisto Herbicide may be tank mixed with other registered soybean herbicides such as Dual Magnum®, Dual II Magnum, and Prefix®. Refer to the tank mix partner label and follow all precautions and restrictions.

If weeds are emerged at the time of application, add either a non-ionic surfactant (NIS) at 1 qt/100 gallons (0.25% v/v) or a crop oil concentrate (COC) at 1 gallon/100 gallons (1% v/v). In addition to NIS or COC, it is also recommended to add either ammonium sulfate (AMS) at 8.5-17 lb/100 gallon (or equivalent).

Restrictions:

1. Apply no more than 6.0 fl oz/A (0.19 lb ai/A) per year.
2. Do not make more than one application of Callisto Herbicide per year.
3. Do not apply Callisto Herbicide to emerged soybeans.
4. Do not graze or feed soybean forage or hay to livestock.

SUGARCANE

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

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

Preemergence Applications: Apply Callisto Herbicide 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 Herbicide. Refer to the tank mix partner label for specific rates and use directions. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Postemergence Applications: Apply Callisto Herbicide 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 Herbicide 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 Herbicide 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 (0.24 lb ai/A) of Callisto Herbicide as a preemergence application.
2. Do not apply more than 3.0 fl oz/A (0.094 lb ai/A) of Callisto Herbicide in a postemergence application.
3. Do not make more than two applications of Callisto Herbicide per year. If a preemergence application of Callisto Herbicide is made, only one postemergence application is allowed.
4. Do not make the second application within 14 days of the first application.
5. Do not apply more than 10.7 fl oz/A (0.334 lb ai/A) of Callisto Herbicide per year.
6. Do not harvest sugarcane within 114 days following a post-over-the-top application of Callisto Herbicide (114 day PHI).
7. Do not harvest sugarcane within 100 days following a post-directed application of Callisto Herbicide (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 food-stuffs. 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.

continued…

STORAGE AND DISPOSAL *(continued)*

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]

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.

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.

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-L1R 0318
4134013

MESOTRIONE | GROUP 27 | HERBICIDE

Callisto® Herbicide

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

Active Ingredient:

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

Callisto® Herbicide is formulated as a suspension concentrate (SC) and 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-L1R 0318 4134013

1 gallon
Net Contents

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary 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 by mouth 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-L2K 0318
4093779

(01) 0 07 02941 76824 6

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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control
From: Pamela J. Bryer, Ph.D. | Pesticides Toxicologist
Subject: Callisto Special Local Need 24c Registration 2022 Review

December 2, 2022

Summary:

Mesotrione, the active ingredient in Callisto, is a low-toxicity herbicide that is unlikely to cause undue risk to people or the environment from the proposed uses in this Special Local Need 24c, registration.

Rationale:

Background: Mesotrione is a pre-emergent and post-emergent herbicide that controls broadleaf weeds. It works by inhibiting a biochemical pathway leading to the synthesis of components of vitamin E and photosynthesis. This product came onto the market in 2001.

Risk is a function of hazard and exposure and both elements must be considered to understand and predict potential effects. Mesotrione has generally low toxicity to organisms in acute exposure scenarios. Chronic exposure to mammals has the potential for toxic effects. Label rates and use patterns are crafted to prevent exposure at levels likely to cause toxic effects in mammals. The generally short half-life and frequency of allowed applications are how exposure is maintained at acceptable levels.

Toxicity:

Hazard Test System	Hazard Categorization	Measured Level of Toxic Effect
Mammals acute	LOW	>5,000 mg/kg
Mammals chronic	HIGH	0.3 mg/kg/day
Birds acute	LOW	>3,776 mg/kg
Birds chronic	MODERATE	20.6 mg/kg/day
Earthworms acute	LOW	>2,000 mg/kg
Earthworms chronic	MODERATE	10.9 mg/kg/day

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90 BLOSSOM LANE, DEERING BUILDING

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Honeybees contact	LOW	>100 ug/bee
Honeybees oral	MODERATE	>11 ug/bee
Fish acute	LOW	>120 mg/L
Fish chronic	LOW	12.4 mg/L
Aquatic invertebrates acute	LOW	>622 mg/L
Aquatic invertebrates chronic	LOW	180 mg/L
Sediment dwelling invertebrates	LOW	180 mg/L

The following is an excerpt from PubChem detailing a human exposure study that was performed with mesotrione roughly twenty years ago:

> "... The mesotrione study was performed to determine the magnitude and duration of the effect on tyrosine catabolism. Additionally, the urinary excretion of unchanged mesotrione was measured to assess the importance of this route of clearance and to help develop a strategy for monitoring occupational exposure. /Three groups, each consisting of six male volunteers between 19 and 53 years, were given a single oral dose of either 0.1, 0.5 or 4 mg mesotrione/kg./ ... Plasma tyrosine concentrations were monitored and the urinary excretion of mesotrione and tyrosine metabolites was measured. ... Administration of mesotrione resulted in an increase in tyrosine concentrations, which reached a maximum of approximately 300 nmol/mL following a dose of 4 mg/kg body weight. Concentrations returned to those of background within 2 days of dosing. Urinary excretion of tyrosine metabolites was increased during the 24 hr immediately following a dose of 4 mg mesotrione/kg, but returned to background levels during the following 24 hr period. " (https://pubchem.ncbi.nlm.nih.gov/compound/Mesotrione#section=Human-Toxicity-Excerpts)

This excerpt is provided simply to demonstrate the relative non-toxic nature of mesotrione in mammals. In this study, humans were dosed at different levels and the concentration of a biomarker of effect were followed. The compound cleared from the body within 24 hours and the effect on amino acid metabolism was finished in 48 hours. Long-term exposures have the potential to negatively effect mammals based on a three-generation study in rats showing effects on food consumption, litter size, and litter viability. Rats but not mice showed these effects at fairly low daily doses.

Additionally, US EPA's 2020 Cancer Classification for mesotrione is: Not Likely To Be Carcinogenic To Humans

Exposure:

Environmental fate and transfer metric	Categorization	Measured value describing movement in environment
Solubility	High	1,500 mg/L
Persistence as measured as half-life		
Lab soil half-life	Non-persistent	4 to 44 days
Field soil half-life	Non-persistent	3 to 7 days
On/In plant tissue half-life		3 to 4.5 days
Sunlit water half-life		81 to 89 days
Water half-life	Stable	Stable
Sediment half-life		5.2 days
Octanol-water partition coefficient (LogP)	Low	0.11
Soil horizon travel		Within top 6 inches
Bioconcentration factor	Low	Calculated ≤ 3
Volatility	Low (particulate only)	5.7 x 10^-3 mPa

Mesotrione has a generally short residence in the environment. Field studies show the product breaks down and is eliminated from the environment over the course of a season under most situations. Mesotrione can be stable and not breakdown if it is in dark water while sunlit waters allow for slow breakdown. The presence of microorganisms predicts rapid degradation and removal from the environment. It is not expected to accumulate in the food chain due to the low bioconcentration factor. The vapor pressure is too low for mesotrione to liberate itself from a surface into the air following application. Mesotrione is considered to be moderately mobile in the environment which is largely based on the high solubility and low low octanol-water partition coefficient.

Maine use patterns:

1) There were 1,189 and 1,137 lbs used by commercial applicators for 2018 and 2019 respectively (label use rates state maximum use rate of 1 lbs/ A/ yr). For reference, Maine has 22.6 million acres.
2) There were 3.1 acres treated each year for 2020 and 2021 of school grounds statewide treated annually with mesotrione.

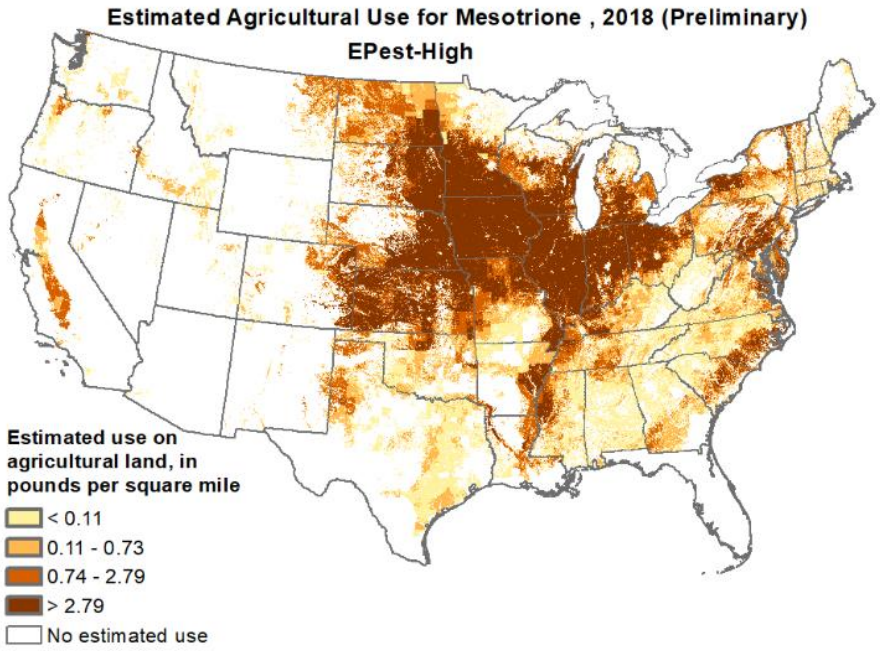
National use patterns:
Tolerances are set for mesotrione in a few commodities all at a single low concentration of 0.01 ppm. Nut trees, okra, oat, rhubarb, soybean, sugarcane, and sorghum are the only commodities with established tolerances (https://www.ecfr.gov/current/title-40/chapter-I/subchapter-E/part-180/subpart-C/section-180.571).

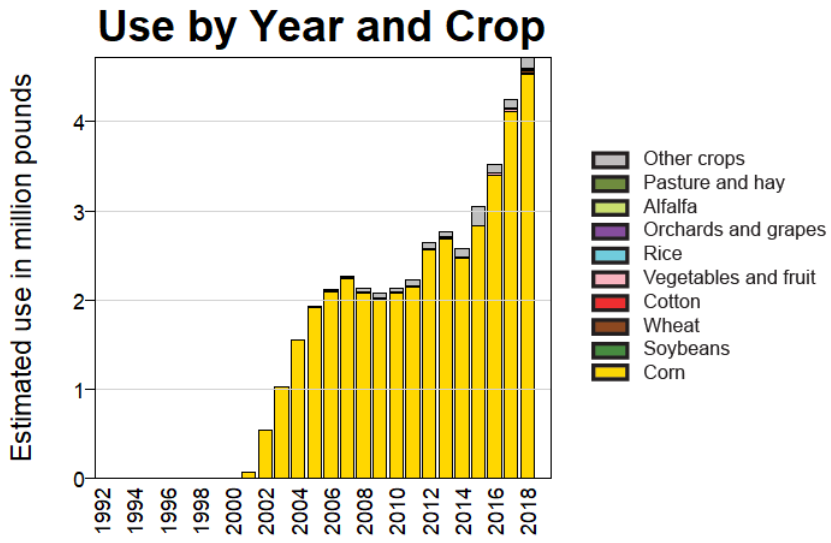
Mesotrione is commonly used in midwestern states on corn as can be seen in the figures from USGS below (https://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2018&map=MESOTRIONE&hilo=H).

Select another pesticide

2018

Epest-High
Epest-Low





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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
Re: Request to extend EPA Special Local Need, Section 24(c) ME-210001 registration for the use of Milestone Herbicide, EPA Reg. No. 62719-519, to control herbaceous broadleaf weeds and woody plants for conifer forest site preparation
Date: November 21, 2022

****

Special Local Need registration, ME-210001 for Milestone Herbicide expires December 31, 2022. Ronald Lemin, Jr, Vegetation Management Sales Consultant, Nutrien Solutions, requests the Board approve a five year extension of Milestone Herbicide, EPA Reg. No. 62719-519, to control herbaceous broadleaf weeds and woody plants for conifer forest site preparation.

This request is submitted on behalf of the Maine forest industry to permit the use of Milestone Herbicide on forested sites for site preparation with planting the following spring. The industry is attempting to replace the use of glyphosate with 40.6 % aminopyralid (triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-), the active ingredient in this product, due to public concerns related to glyphosate.

The use of Milestone Herbicide for forest site preparation is not included in the approved EPA master label. The permitted rate under this SLN is up to 7 fl oz applied in a total spray volume of 10-30 gal/A which is consistent with other uses on the Section 3 label.

Milestone Herbicide reduces competition by controlling herbaceous broadleaf weeds and woody plants, including native conifers. Mr. Lemin reported two site preparation trials in 2018 with the Milestone site resulting in good brush control and good seedling vigor and that several Maine landowners have successfully used the product since 2020.

Aminopyralid is highly soluble in water. Solubility of 203-212 mg/L reported in the table below may be erroneous because other sources report 2480 mg/L (Corteva Agrisciences, National Center for Biotechnology Information 2020, U.S. EPA 2005a, U.S. EPA 2005b). It demonstrates moderately high adsorption in soils high in organic matter and low potential for movement and leaching below the root zone (WIN-PST 3.1). Dow Agrosciences research demonstrated low potential for groundwater contamination due to “slow use rates, moderate field degradation rates and limited motility observed in field studies” (Dow AgroSciences LLC). Aminopyralid has not been detected in Maine groundwater studies. The potential to runoff in solution or attached to soil particles is intermediate (WIN-PST 3.1).

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DEPARTMENT OF Agriculture Conservation & Forestry

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It is moderately persistent, stable to hydrolysis and anaerobic metabolism (U.S. EPA 2005a, U.S. EPA 2005b). However, the half-life in soils, and water is highly variable, dependent upon aerobic or anaerobic conditions, pH, soil type, and amount of sunlight.

Aminopyralid exhibits low human and environmental toxicity (U.S. EPA 2005a, U.S. EPA 2005b, WIN-PST 3.1). It is "practically nontoxic to mammals, birds, fish, honeybees, and aquatic invertebrates". Please refer to the memorandum from Pam Bryer, BPC toxicologist, for further information on toxicity.

WIN-PST Results based on a broadcast application at a rate of greater than ¼ lb AI/A.

HL	Koc	SOL	PLP	PSRP	PARP	HumanT	HumanToxT	MATC
26	1000	203-212	Low	Intermediate	Intermediate	3500	HA	1360

WIN-PST 3.1. Windows Pesticide Screening Tool

HL -Half-life in the soil in days
Koc – Soil organic carbon sorption coefficient in mL/g
SOL -Solubility in water in mg/L (ppm)
PLP – Pesticide leaching potential
PSRP – Pesticide solution runoff potential
PARP – Pesticide adsorbed runoff potential
Human T – Human toxicity value – long term (ppb)
HumanToxT – Human toxicity type
MATC – Maxiumum acceptable toxicant concentration – fish (ppb)

Enclosed are supporting documents for your consideration to extend the SLN through December 31, 2027. Please let me know if you have any questions.

- Corteva Agriscience Milestone Herbicide draft Section 24(c) label
- Letter of request from Ron Lemin, Jr., Vegetation Management Sales Consultant, Nutrien Solutions
- Letter of support from Deatra Gremaux Corteva Agrisciences
- Corteva Agriscience Milestone Herbicide Section 3 container label

The toxicological review by Dr. Pam Bryer is provided under separate cover.

Citations

Dow AgroSciences LLC. Aminopyralid Family of Herbicides. Indianapolis, IN. https//www.corteva.us/dam/products/us-land-management/pdf (accessed on November 21, 2022).

National Center for Biotechnology Information. PubChem Database. Aminopyralid, CID=213012, https://pubchem.ncbi.nlm.nih.gov/compound/Aminopyralid (accessed November 21, 2022).

U.S. EPA. Pesticide Fact Sheet. Aminopyralid. 2005a. United States Office of Prevention, Pesticides, Environmental Protections and Toxic Substances Agency. https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-005100_10-Aug-05.pdf (accessed on July 13, 2020).

U.S. EPA. Environmental Fate and Ecological Risk Assessment for the Registration of Aminopyralid. 2005b. https://archive.epa.gov/pesticides/chemicalsearch/chemical/foia/web/html/005100.html (accessed on July 6,2020).

AMINOPYRALID	GROUP	4	HERBICIDE

FIFRA Section 24(c)
Special Local Need Label

Corteva Agriscience, LLC, 9330 Zionsville Road, Indianapolis, IN 46268-1054 USA

Milestone®

EPA Reg. No. 62719-519

FIFRA Section 24(c) Special Local Need Registration
EPA SLN ME-210001

This SLN expires and must not be used or distributed after December 31, 2027.
For Distribution and Use Only Within the State of Maine

For Control Of Herbaceous Broadleaf Weeds And Woody Plants in Conifer Forest Site Preparation Sites

Directions for Use

ATTENTION

- It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
- This Special Local Need (SLN) labeling and the federal label for this product must be in the possession of the user at the time of pesticide application.
- Read this SLN labeling and the label affixed to the container for Milestone before applying.
- Follow all applicable use directions, precautions, restrictions, and statements pertaining to the Worker Protection Standard on this SLN labeling and the label affixed to the product container.

Refer to product label for Use Precautions, Restrictions, Worker Protection Standards, Mixing Instructions, and Application Methods.

Conifer Forest Site Preparation Areas

Milestone may be applied to conifer forests areas as an aerial or ground broadcast application, as a spot application, or as a high-volume foliar application to control herbaceous broadleaf weeds and woody plants. Avoid spray containing Milestone coming in contact with foliage of desirable tree species.

Milestone may be applied alone or in tank-mix combinations with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated, and (2) mixing is not prohibited by the label of the registered tank mixed products. Use as directed in the Directions for Use section of the tank-mix partner.

Forest Management Applications

Use up to 7 fl oz of Milestone per acre. Use a non-ionic agricultural surfactant for all foliar applications. Tank mixtures with other herbicides registered for forest use may be necessary to control woody brush if brush is not susceptible to Milestone. When tank mixtures of herbicides are used for forest site preparation, labels for all products in the mixture must be followed and the longest recommended waiting period before planting observed.

For best control from broadcast and directed spray applications of Milestone, use a spray volume that will provide thorough plant coverage. Recommended spray volumes are usually 10 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. To improve spray coverage of spray volumes less than 50 gallons per acre, add an agriculturally labeled non-ionic surfactant at the recommended rate specified on the surfactant label.

R879-091
Accepted: __/__/____
Replaces: R879-083

Ronald C. Lemin, Jr.
Vegetation Management Sales Consultant
291 Lincoln Street
Bangor, Maine 04401
207-944-6160 (m)
Ronald.lemin@nutrien.com

October 24, 2022

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

Dear Mary and the Board of Pesticides Control,

I am in support of renewing the 24(c) Special Local Need registration for Milestone, EPA Registration Number 62719-519 for use on forested sites in Maine to control broad-leaved plants, woody brush, and native conifer species in the silvicultural site preparation process. As you know glyphosate has come under continued resistance over the past several years. Forest industry has slightly moved away from glyphosate especially in their site preparation prescription and gone with imazapyr, sulfometuron methyl, and metsulfuron methyl for the bulk of their mixes. Canada thistle and volunteer softwood continue to be a problem competition species and Milestone added to the site preparation mix can help control these species.

Several Maine landowners have used Milestone in their site preparation prescription since the 24(c) was granted in 2020. We would like to continue using the product until Corteva can reregister the product and add the 24(c) wording to their existing label. I am not sure what the timeframe would be, but it appears EPA is not moving extremely fast the last couple of years.

I appreciate your time and consideration in this label request. If you should have any further questions, please feel free to contact me at the address above. I would also be available to answer questions at the next Board Meeting if necessary.

Sincerely,

Ronald C. Lemin, Jr

Corteva Agriscience
9330 Zionsville Road
Indianapolis, IN 46268
USA

November 2, 2022

Mary Tomlinson,
Maine Department of Agriculture, Conservation and Forestry
Board of Pesticides Control
Marquardt Building
32 Blossom Lane
Augusta, ME 04333-0028
Submitted by email to: Mary.E.Tomlinson@maine.gov
Attn: Mary Tomlinson

APPLICATION FOR SPECIAL LOCAL NEED SECTION 24(c) REGISTRATION
MILESTONE (A.I. AMINOPYRALID)
EPA REG. NO. 62719-519
FOR CONTROL OF HERBACEOUS BROADLEAF WEEDS AND WOODY PLANTS IN CONIFER FOREST SITE PREPARATION SITES

Corteva Agriscience, LLC respectfully requests extension of FIFRA Section 24(c) Special Local Need (SLN) registration for Milestone®, EPA Registration Number 62719-519, for control of herbaceous broadleaf weeds and woody plants in conifer forest site preparation sites. This request is being made with the support of Ronald Lemin, Jr. of Nutrien Solutions. Corteva Agriscience has a similar Sec 24(c) label registered in Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, Minnesota, North Carolina, South Carolina, Texas, and Virginia.

Currently, Capstone® herbicide is labeled for forestry uses: Capstone is a combination of aminopyralid + triclopyr. Triclopyr is not needed on all sites, and use of Milestone herbicide alone (aminopyralid only, without the triclopyr in Capstone) will fit forestry site preparation uses better on many sites. As a tool in forestry, Milestone enhances the ability to establish conifer species generally intolerant to the other existing herbicides used in forestry. Milestone, when added to current forest site prep mixtures, provides control of wildling pines that cannot be achieved with currently available commercial herbicides or herbicide mixtures. It has the added benefit of reducing the overall amount of chemical used in forestry treatments.

Milestone has shown excellent herbaceous vegetation and brush control when applied alone or in combination with low rates of other forestry herbicides. Milestone has demonstrated the ability to suppress or inhibit germination of difficult-to-control species such as Canada thistle, Japanese stiltgrass, marestail, and tree of heaven not found in other forestry herbicides. Milestone also provides excellent control of legume species such as black locust that cannot be achieved with currently available commercial herbicides or herbicide mixtures.

Research results and commercial applications have demonstrated that Milestone can safely be used for forest site preparation as close as 2 months prior to planting crop conifer trees (bare root or container seedlings) without damage or growth reduction impacts to the planted trees.

Milestone herbicide has some soil activity and has been shown to provide residual pre-emerge control of germinating weed seed, particularly weeds in the aster and composite weed families. Applications of Milestone as part of fall forest site preparation programs provides residual soil activity and spring weed control of susceptible weed species. In certain situations, site prep programs with Milestone can reduce or eliminate the need for spring “over-the-top” (of planted pines) herbicide applications – an additional potential to reduce herbicide usage and total environmental pesticide loading.

In most situations, the addition of Milestone provides reductions in per acre use rates of other herbicides typically used in forest site preparation mixtures. Maximum use rate of Milestone is very low at 1.75 oz ai/acre. This low use rate can substitute for as much as 1 lb+ of current herbicides such as glyphosate, triclopyr, imazapyr, etc.

Attachments/enclosures

Please find the following documents attached/enclosed:

- Letter/request and justification from registrant (this letter)
- US EPA Form 8570-25: Application for SLN
- SLN ME-210001 with following revisions:
  - Proposed expiration date Dec 31, 2027
  - Inclusion of the MOA bar for the active ingredient
  - Internal tracking code at bottom of label: R879-091 (replaces R879-083)
- Letter of Support from Ronald C. Lemin, Jr. of Nutrien Solutions dated October 24, 2022

If you have any questions or require additional information, please feel free to contact me by email or phone. You may also contact Wes Marchione, State Regulatory Lead, wes.marchione@corteva.com.

Sincerely,

Deatra Gremaux

Deatra Gremaux
Crop Protection Regulatory Specialist, US
317-337-5345 or deatra.gremaux@corteva.com
Attachments/enclosures

AMINOPYRALID	GROUP	4	HERBICIDE

CORTEVA™ agriscience

Milestone®

HERBICIDE

- **For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines on:**
  - **rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP);**
  - **non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses;**
  - **natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools;**
  - **including grazed areas in and around these sites.**

***Hay from grass treated with Milestone within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.**

Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

Active Ingredient:

Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-	40.6%
Other Ingredients	59.4%
Total	100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) - 21.1% - 2 lb/gal

Keep Out of Reach of Children

CAUTION

Agricultural Use Requirements

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

Refer to inside of label booklet for Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs, or clothing.

EPA Reg. No. 62719-519 EPA Est. 62719-MI-002
CD02-879-022

Produced for
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

6 62974 58106 2

NET CONTENTS 2.5 GAL

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Causes Moderate Eye Irritation

Avoid contact with eyes or clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

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.

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.

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. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

Do not apply directly to water. Take care to minimize the incidental overspray along the shoreline when applying to terrestrial plants at the water's edge or to water in areas where surface water is present. Do not apply directly to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Directions for Use

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

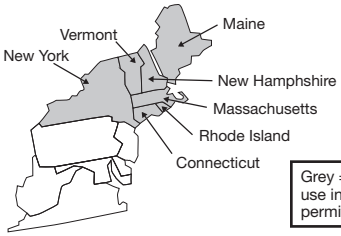
Read all Directions for Use carefully before applying.

This product is not intended for reformulation or repackaging into other end-use products.

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.

Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

Not for use on pastures in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. All other labeled uses are permitted in these states including grazed areas in and around these sites.



Grey = states where use in pasture is not permitted

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 48 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
- Chemical-resistant gloves made of any waterproof material as polyethylene or polyvinyl chloride
- Shoes plus socks
- Protective eyewear

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 does not pertain to non-agricultural use on sites, such as, rangeland, permanent grass pastures, or non-cropland. See the Agricultural Use Requirements section below for information where the WPS applies.

Entry Restrictions for Non-WPS Uses: For applications on rangeland and permanent grass pastures (not harvested for hay) and non-cropland areas, do not enter or allow worker entry into treated areas until sprays have dried.

Storage and Disposal

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

Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.

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

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **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 1/4 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. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Resistance Management Guidelines

This product contains aminopyralid, a Group 4 synthetic auxin. Appropriate resistance-management strategies should be followed.

- Development of plant populations resistant to this herbicide mode of action is usually not a problem on rangeland, permanent grass pastures, Conservation Reserve Program (CRP), or non-cropland sites since these sites receive infrequent pesticide applications.
- In croplands, use an effective integrated pest management (IPM) program, integrating tillage or other mechanical methods, crop rotation, or other cultural control methods into weed control programs whenever practical.
- Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its labeled rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area.
- Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed.
- Contact your extension specialist, certified crop consultant, or a Corteva Agriscience customer service representative 1-800-258-3033 for the latest resistance-management information.

Use Precautions

- Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of Milestone. Injury to crops may result if treated soil and/or runoff water containing Milestone is washed or moved onto land used to produce crops. Exposure to Milestone may injure or kill susceptible crops and other plants such as grapes, soybeans, tobacco, sensitive ornamentals.
- **Grass revegetation**:
  - Milestone can be used to control broadleaf plants in grass revegetation programs. Consult Corteva Agriscience literature for more details about Milestone applications and grass stand establishment.
- **Application before seeding grasses**
  - Milestone can be applied to control broadleaf weeds prior to grass planting. Grass seed germination and seedling development can be adversely effected by many factors such as seed viability and seedling vigor, soil condition (sub-optimal soil temperatures or soil water content), weather after planting, seedbed preparation and seed placement, disease, insects, or animals. Milestone applications will help to reduce competition from weeds and improve the chance for successful grass stand establishment. Some grass species are more sensitive to Milestone; consult Corteva Agriscience literature for more details.
  - **Postemergence applications on grass:** During the season of establishment, Milestone should be applied only after perennial grasses are well established (have developed a good secondary root system and show good vigor). Most perennial grasses are tolerant to Milestone at this stage of development. Milestone may suppress certain established grasses such as smooth bromegrass (*Bromus inermis*), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition.

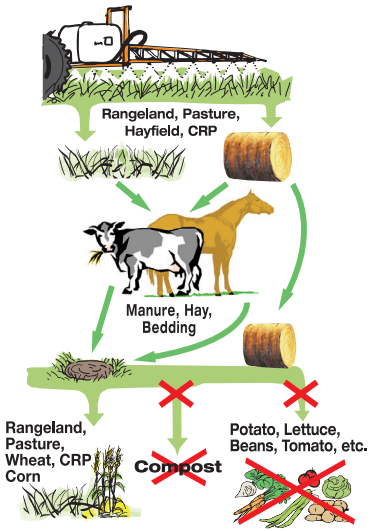
- **Seeding Broadleaf Plants (Forbs) and Wildflowers**
  Milestone can be applied in the summer to control broadleaf weeds prior to forb planting. Forbs can be seeded 90 days after a summer application as a dormant fall planting or the following spring. Consult Corteva Agriscience literature for details.
- **Field Bioassay Instructions:** In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern, or drainage. The field bioassay can be initiated one year after the last application of aminopyralid in that field. Observe the test crop for symptoms of herbicidal activity such as poor stand (effect on seed germination), chlorosis (yellowing), epinasty, necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the intended rotational crop; plant only to wheat, forage grasses, native grasses, or grasses grown for hay.

Consult with a Corteva Agriscience representative if you do not understand the Use Precautions and Use Restrictions. Call 1-800-258-3033 for more information.

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section ***"Restrictions in Hay or Manure Use."***
- It is mandatory to follow the ***"Use Precautions and Restrictions"*** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Corteva Agriscience representative if you do not understand the Use Precautions and Use Restrictions. **Call 1-800-258-3033 Customer Information Group**.

Forage and Manure Management



Pasture and Rangeland Restrictions

- **Do not use grasses treated with Milestone in the preceding 18 months for hay intended for export outside the United States.**
- **Hay from areas treated with Milestone in the preceding 18 months CANNOT be distributed or made available for sale off the farm or ranch where harvested unless allowed by supplemental labeling.**
- **Hay from areas treated with Milestone in the preceding 18 months CANNOT be used for silage, haylage, baleage, and green chop unless allowed by supplemental labeling.**

- **Do not move hay made from grass treated with Milestone within the preceding 18 months off farm unless allowed by supplemental labeling.**
- **Do not use hay or straw from areas treated with Milestone within the preceding 18 months or manure from animals feeding on hay treated with Milestone in compost.**
- **Do not use grasses treated with Milestone in the preceding 18 months for seed production.**

Restrictions for All Uses

Maximum Application Rate: On all labeled use sites, do not broadcast apply more than 7 fl oz per acre of Milestone per year. The total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product around public waters. State or local public agencies may require permits.

- **Avoiding Injury to Non-Target Plants:** Do not aerially apply Milestone within 50 feet of a border downwind (in the direction of wind movement), or allow spray drift to come in contact with any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Read and consider the Spray Drift Management and Aerial Drift Reduction Advisory to help minimize the potential for spray drift.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not contaminate water intended for irrigation or domestic purposes.** Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes.
- Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.
- Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Do not apply Milestone within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses and leguminous trees such as locusts, redbud, mimosa, and caragana.
- Do not treat frozen soil where runoff could damage sensitive plants.
- **Grazing and Haying Restrictions:** There are no restrictions on grazing or grass hay harvest following application of Milestone at labeled rates. Cutting hay too soon after spraying weeds will reduce weed control. Wait 14 days after herbicide application to cut grass hay to allow herbicide to work. Do not transfer grazing animals from areas treated with Milestone to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture. Otherwise, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- **Grazing Poisonous Plants:** Herbicide application may increase palatability of certain poisonous plants. Do not allow livestock to graze treated areas until poisonous plants are dry and no longer palatable to livestock.
- **Restrictions in Hay or Manure Use:**
  - Do not use aminopyralid-treated plant residues, including grass, wood plants, trees, hay, or straw from areas treated within the preceding 18 months, in compost, mulch wood chips, or mushroom spawn.
  - Do not use manure from animals that have eaten aminopyralid-treated forage or hay within the previous 3 days in compost, mulch, or mushroom spawn. Livestock must have 3 days of eating non-aminopyralid-treated materials in order to clear their system of aminopyralid. Do not use aminopyralid-treated plants in areas where commercially grown mushrooms or susceptible broadleaf plants may be grown.
  - Do not spread manure from animals that have consumed aminopyralid-treated forage or hay within the previous 3 days on land used for growing susceptible broadleaf crops.
  - Manure from animals that have consumed aminopyralid-treated forage or hay within the previous 3 days may only be used on areas used for pasture, grass grown for seed, wheat, and corn.
  - Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields or areas treated with aminopyralid or manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
  - Do not plant a broadleaf crop in fields or areas treated in the previous year with manure from animals that have consumed aminopyralid-treated forage or hay until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
  - To promote herbicide decomposition, plant residues should be evenly incorporated in the surface soil or burned. Breakdown of aminopyralid in plant residues or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation.
- **Crop Rotation:** Do not rotate to any crop from rangeland, permanent pasture, or CRP acres within one year following treatment. Cereals and corn can be planted one year after treatment. Broadleaf crops are sensitive to aminopyralid residues in the soil and prediction of crop safety by field bioassay (see instructions below) is the BEST way to determine planting options. Broadleaf crops such as canola,

flax, and alfalfa can require **at least** 2 to 3 years depending on the crop and environmental conditions. More sensitive crops such as soybeans, tobacco, peanuts, potatoes, and peas may require a longer plant-back interval and should not be planted until a field bioassay shows that the level of aminopyralid present in the soil will not adversely affect that broadleaf crop.

Spray Drift Management

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

Avoid application under conditions that may allow spray drift because very small quantities of spray, which may not be visible, may injure susceptible crops. This product should be applied only when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, non-target crops, and other plants) is minimal (e.g., when wind is blowing away from the sensitive areas). A drift control aid may be added to the spray solution to further reduce the potential for drift. If a drift control aid is used, follow the use directions and precautions on the manufacturer's label. Do not use a thickening agent with Microfoil, Thru-Valve booms, or other spray delivery systems that cannot accommodate thickened spray solutions.

Importance of Droplet Size
An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Ground Equipment: With ground equipment, spray drift can be lessened by keeping the spray boom as low as possible; by applying 10 gallons or more of spray per acre; by keeping the operating spray pressures at the manufacturer's specified minimum pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to thermal inversions. Direct sprays no higher than the tops of target vegetation and keep spray pressures low enough to provide coarse spray droplets to minimize drift.

Aerial Application: Avoid spray drift at the application site. The interaction of many equipment-related and weather-related factors determine the potential for spray drift. Users are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The boom length must not exceed 75% of the fixed wing span and must be located at least 8 to 10 inches below the trailing edge of the fixed wing; the boom length must not exceed 85% of the rotary blade.
2. Nozzles should be pointed backward parallel with the air stream or not pointed downward more than 45 degrees.

State and local regulations must be followed.

The applicator should be familiar with, and take into account, the information covered in the following **Aerial Drift Reduction Advisory**. This information is advisory in nature and does not supersede mandatory label requirements.

Aerial Drift Reduction Advisory

Information on Droplet Size: The most effective way to reduce 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 (see Wind, Temperature and Humidity, and Temperature Inversions).

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 specified pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that will provide uniform coverage.
- **Nozzle Orientation** - Orient nozzles so that the spray is released parallel to the airstream to produce larger droplets than other orientations. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan for airplanes or 85% of rotor blade diameter for helicopters.

Application Height: Applications should not be made 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.

Swath Adjustment: 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. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors including droplet size and equipment type determine drift potential at any given speed. Application should be avoided when wind speeds are below 2 mph due to variable wind direction and high inversion potential. **Note**: Local terrain such as valleys and ravines can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: 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.

Temperature Inversions: Applications should not occur during a local, low-level 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 the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sprayer Clean-Out Instructions

It is recommended to use separate spray equipment on highly sensitive crops such as tobacco, soybeans, potatoes, peanuts, and tomatoes.

Do not use spray equipment used to apply Milestone for other applications to land planted to, or to be planted to, broadleaf plants unless it has been determined that all residues of this herbicide have been removed by thorough cleaning of equipment.

Equipment used to apply Milestone should be thoroughly cleaned before reusing to apply any other chemicals as follows:

1. Rinse and flush application equipment thoroughly after use. Dispose of rinse water in non-cropland area away from water supplies.
2. Rinse a second time, adding 1 quart of household ammonia or tank cleaning agent for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15 to 20 minutes). Let the solution stand for several hours, preferably overnight.
3. Flush the solution out of the spray tank through the boom.
4. Rinse the system twice with clean water, recirculating and draining each time.
5. Spray nozzles and screens should be removed and cleaned separately.

Do not apply this product with mist blower systems that deliver very fine spray droplets. Use of mist blower equipment can reduce control achieved with the herbicide and increase spray drift potential.

Use Information

Apply the specified rate of Milestone as a coarse low-pressure spray. Do not apply this product with mist blower systems that deliver very fine spray droplets. Spray volume should be sufficient to uniformly cover foliage or intended application site. Increase the spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. To enhance foliage wetting and coverage, a non-ionic agricultural surfactant or other adjuvant may be added to the spray mixture as specified by the adjuvant label.

Milestone may be applied by ground or aerial application equipment on any registered use site specified on this label.

Ground Broadcast Application: Higher spray volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage.

Aerial Broadcast Application: Do not apply less than 2 gallons per acre total spray volume. Five gallons per acre or greater will generally provide better coverage and better control, particularly in dense and/or tall foliage.

High-Volume Foliar Application: High volume foliar treatments may be applied at rates equivalent to a maximum of 7 fl oz per acre per year. Use sufficient spray volume to thoroughly and uniformly wet foliage and stems.

For basal bark and cut stubble and all types of cut surface applications, see woody plant section.

Low-Volume Foliar Treatment

To control susceptible woody plants, use Milestone alone or in tank mixes with other herbicides in water. The spray concentration of Milestone tank mixes and total spray volume per acre should be adjusted according to the size and density of target woody plants and type of spray equipment used. With low-volume application, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars.

For best results, an adjuvant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck-mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Spot Application: Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications. Spray volume should be sufficient to thoroughly and uniformly wet the weed foliage, but not to the point of runoff. Repeat treatments may be made, but the total amount of Milestone applied must not exceed 7 fl oz per acre per year. To prevent misapplication, spot treatments should be applied with a calibrated sprayer with a known volume per acre. Table 1 shows Milestone amount to mix for various sprayer outputs in gallons per acre (GPA).

Table 1: Amount of Milestone **(in mL)** to mix in **1 gallon of water**

Gallons per acre	Milestone amount (in mL) to mix to achieve target application rates		
GPA	**5 fl oz/a**	**7 fl oz/a**	**14 fl oz/a**
20	7.5	10.5	21.0
30	5.0	7.0	14.0
40	3.8	5.3	10.5
50	3.0	4.2	8.4
60	2.5	3.5	7.0
70	2.1	3.0	6.0
80	1.9	2.6	5.3
90	1.7	2.3	4.7
100	1.5	2.1	4.2

Use a syringe to measure cc

Note: Table 1 above shows mixes for various sprayer outputs in gallons per acre (GPA).

Conversions:

1 tsp = 5 mL	30 ml = 1 fluid ounce	1 cc = 1 mL
3 tsp = 1 Tbsp	2 Tbsp = 1 fluid ounce	

Mixing Instructions

Mixing with Water: To prepare the spray, add about half the required amount of water in the spray tank. Then, with agitation, add the specified amount of Milestone and other herbicides (if tank mixing). Finally, with continued agitation, add the rest of the water and additives such as adjuvants, surfactants, or drift control and deposition aids.

Addition of Surfactants or Adjuvants on All Labeled Use Sites: The addition of a high quality non-ionic surfactant (of at least 80% active principal) or adjuvant at 0.25 to 0.5% volume per volume (1 to 2 quarts per 100 gallons of spray) is recommended to enhance herbicide activity under adverse environmental conditions (such as, high temperature, low relative humidity, drought conditions, dusty plant surfaces) or when weeds are heavily pubescent or more mature.

Tank Mixing with Other Herbicides: Milestone may be applied in tank mix combination with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated, (2) mixing is not prohibited by the label of the tank mix product(s), and (3) that the tank mix combination is physically compatible (see tank mix compatibility testing below). When tank mixing, use only in accordance with the restrictions, precautions, and limitations on the respective product labels.

- It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.
- Do not exceed specified application rates. If products containing the same active ingredient are mixed, do not exceed the maximum allowable active ingredient use rates.
- For direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility.
- Always perform a compatibility test (jar test) to ensure the compatibility of products to be used in tank mixture.

Tank Mix Compatibility Testing: Perform a jar test prior to mixing in a spray tank to ensure compatibility of Milestone and other pesticides or carriers. Use a clear glass jar with lid and mix ingredients in the same order and proportions as will be used in the spray tank. The mixture is compatible if the materials mix readily when the jar is inverted several times. The mixture should remain stable after standing for 30 minutes or, if separation occurs, should readily remix if agitated. An incompatible mixture is indicated by separation into distinct layers that do not readily remix when agitated, and/or the presence of flakes, precipitates, gels, or heavy oily film in the jar. Use of an appropriate compatibility aid may resolve mix incompatibility. If the mixture is incompatible do not use that tank mix partner in tank mixtures.

Invert Emulsion Spray Mixtures
Milestone can be applied in an invert emulsion using oil and an appropriate inverting agent. Follow label directions of the inverting agent.

Mixing with Sprayable Liquid Fertilizer Solutions: Milestone is usually compatible with liquid fertilizer solutions. It is anticipated that Milestone will not require a compatibility agent for mixing with fertilizers; however, a compatibility test (jar test) should be made prior to mixing. Jar tests are particularly important when a new batch of fertilizer or pesticide is used, when water sources change, or when tank mixture ingredients or concentrations are changed. Compatibility may be determined by mixing the spray components in the desired order and proportions in a clear glass jar before large scale mixing of spray components in the spray tank.

Note: The lower the temperature of the liquid fertilizer, the greater the likelihood of mixing problems. Use of a compatibility aid may be required if Milestone is mixed with a 2,4-D-containing product and liquid fertilizer. **Mixing Milestone and 2,4-D in N-P or N-P-K liquid fertilizer solutions is more difficult than mixing with straight nitrogen fertilizer and should not be attempted without first conducting a successful compatibility jar test.** Agitation in the spray tank must be vigorous to be comparable with jar test agitation. Apply the spray mixture the same day it is prepared while maintaining continuous agitation. Rinse the spray tank thoroughly after use.

Note: Foliar-applied liquid fertilizers themselves can cause yellowing of the foliage of forage grasses and other vegetation.

Use Rates and Timing

Milestone may be applied as a broadcast spray by ground or aerial equipment or as a spot application to control weeds including, but not limited to, those listed on this label. When a rate range is given, use the higher rate to control weeds at advanced growth stages or when under less-than-favorable growing conditions. For optimum uptake and translocation of Milestone, avoid mowing, haying, shredding, burning, or soil disturbance in treated areas for at least 14 days following application.

Milestone provides post emergence control and preemergence control of emerging seedlings of susceptible weeds and re-growth of certain perennial weeds following application. Preventing establishment of weeds will depend upon application rate, season of application, and environmental conditions after application.

Milestone can provide long-term control of susceptible weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term weed control is most effective where grass vegetation is allowed to recover from overgrazing, drought, etc., and compete with weeds.

Milestone can be an important component of integrated vegetation management programs designed to renovate or restore desired plant communities. To maximize and extend the benefits of weed control provided by Milestone, it is important that other vegetation management practices, including proper grazing management, biological control agents, replanting, fertilization, prescribed fire, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired plant communities. Agricultural and natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs.

Plants Controlled

The following weeds and woody plants will be controlled with the rates of Milestone indicated below in Table 2. For best results, most weeds and woody plants should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate in the rate range when growing conditions are less than favorable or when weed foliage is tall and dense, or when optimal longer term residual control is desired. Milestone also provides preemergence control of germinating seeds or seedlings of susceptible weeds following application.

Table 2: Weeds and Woody Plants Controlled
Note: Numbers in parentheses (-) refer to specific use directions for a particular weed species.

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
amaranth, spiny	*Amaranthus spinosus*	4 to 7	annual	Amaranthaceae
bedstraw	*Galium spp.*	4 to 7	perennial	Rubiaceae
beggarticks	*Bidens spp.*	4 to 7	annual	Asteracea
broomweed, annual	*Amphiachyris dracunculoides*	4 to 7	annual	Asteraceae
burdock, common	*Arctium minus*	4 to 7	biennial	Asteraceae
buttercup, hairy	*Ranunculus sardous*	4 to 7	annual	Ranunculaceae
buttercup, tall	*Ranunculus acris*	4 to 7	perennial	Ranunculaceae
buttercup spp	*Ranunculus spp*	4 to 7	various	Ranunculaceae
camelthorn	*Alhagi pseudalhagi*	5 to 7	perennial	Fabaceae
cat's ear, common	*Hypochaeris radicata*	5 to 7	perennial	Asteracea
cat's ear	*Hypochaeris spp*	5 to 7	perennial	Asteracea
chamomile, scentless	*Matricaria inodora*	4 to 7	annual	Asteraceae
chicory	*Cichorium intybus*	4 to 6	perennial	Asteraceae
chickweed	*Stellaria media*	7	annual	Caryophyllaceae
cinquefoil, sulfur (1)	*Potentilla recta*	4 to 7	perennial	Rosaceae
cocklebur	*Xanthium strumarium*	3 to 5	annual	Asteraceae
clover	*Trifolium spp.*	5 to 7	perennial	Fabaceae
crazyweed	*Oxytropisp*	5 to 7	perennial	Fabaceae
croton, tropic	*Croton glandulosus*	3 to 5	annual	Euphorbiaceae
crownvetch	*Securigera varia*	5 to 7	perennial	Fabaceae
cudweed, purple	*Gamochaeta purpurea*	4 to 7	annual	Asteraceae
daisy, oxeye (1)	*Leucanthemum vulgare*	4 to 7	perennial	Asteraceae
dock, curly	*Rumex crispus*	4 to 7	perennial	Polygonaceae
evening primrose, cutleaf	*Oenothera laciniata*	4 to 7	annual	Onagraceae
fiddleneck	*Amsinckia spp*	4 to 7	annual	Boraginaceae
fireweed	*Epilobium angustifolium*	5 to 7	perennial	Onagraceae
fleabane, flax-leaf	*Conyza bonariensis*	4 to 7	annual	Asteraceae
fleabane, hairy	*Conyza bonariensis*	5 to 7	annual/biennial	Asteraceae
hawkweed, orange (2)	*Hieracium aurantiacum*	4 to 7	perennial	Asteraceae
hawkweed, yellow (2)	*Hieracium caespitosum*	4 to 7	perennial	Asteraceae
henbane, black	*Hyoscyamus niger*	5 to 7	annual/biennial	Solanaceae
henbit	*Lamium amplexicaule*	5 to 7	annual/biennial	Lamiaceae
hogweed, giant	*Heracleum mantegazzianum*	7	perennial	Apiaceae
horsenettle, Carolina	*Solanum carolinense*	4 to 7	perennial	Solanaceae

Table 2: Weeds and Woody Plants Controlled (Cont.)
Note: Numbers in parentheses (-) refer to specific use directions for a particular weed species.

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
horseweed (marestail)	*Conyza canadensis*	4 to 7	annual	Asteraceae
ironweed, tall	*Vernonia gigantea*	5 to 7	perennial	Asteraceae
ironweed, western	*Vernonia baldwinii*	7	perennial	Asteraceae
knapweed, diffuse (3)	*Centaurea diffusa*	5 to 7	biennial/perennial	Asteraceae
knapweed, meadow	*Centaurea debeauxii*	5 to 7	perennial	Asteraceae
knapweed, Russian (4)	*Acroptilon repens*	5 to 7	perennial	Asteraceae
knapweed, spotted (3)	*Centaurea stoebe*	5 to 7	biennial/perennial	Asteraceae
knapweed, squarrose	*Centaurea virgata*	5 to 7	biennial/perennial	Asteraceae
knapweeds	*Centaurea spp.*	5 to 7	biennial/ perennial	Asteraceae
knotweeds, Japanese, bohemian (11)	*Reynoutria japonica*	7 to 14	perennial	Polygonaceae
kudzu	*Pueraria montana*	7	perennial	Fabaceae
lady's thumb	*Polygonum persicaria*	3 to 5	annual	Polygonaceae
lambsquarters	*Chenopodium album*	5 to 7	annual	Chenopodiaceae
lespedeza, annual	*Lespedeza striata*	5 to 7	annual	Fabaceae
licorice, wild	*Glycyrrhiza lepidota*	7	perennial	Fabaceae
locoweed	*Astragalus spp.*	5 to 7	perennial	Fabaceae
locust, black	*Robinia pseudoacacia*	7	woody perennial	Fabaceae
locust, honey	*Gleditsia triacanthos*	7	woody perennial	Fabaceae
loosestrife, purple (12)	*Lythrum salicaria*	7 to 14	perennial	Lythraceae
mayweed, scentless	*Tripleurospermum perforate*	4 to 7	annual	Asteraceae
mayweed, stinking	*Anthemis cotula*	7	annual	Asteraceae
medic, black	*Medicago lupulina*	4 to 7	perennial	Fabaceae
mimosa	*Albizia julibrissin*	7	woody perennial	Fabaceae
mullein (5)	*Verbascum spp.*	7	biennial	Scrophulariaceae
nightshade, silverleaf	*Solanum elaeagnifolium*	4 to 7	perennial	Solanaceae
oxtongue, bristly	*Picris echioides*	5 to 7	biennial	Asteraceae
pea, Swainson	*Sphaerophysa salsula*	5 to 7	perennial	Fabaceae
povertyweed	*Iva axillaris*	5 to 7	perennial	Asteraceae
ragweed, common	*Ambrosia artemisiifolia*	3 to 5	annual	Asteraceae
ragweed, western	*Ambrosia psilostachya*	4 to 7	perennial	Asteraceae
ragweed, giant	*Ambrosia trifida*	4 to 7	annual	Asteraceae
ragwort, tansy	*Senecio jacobaea*	5 to 7	perennial	Asteraceae
redbud	*Cercis Canadensis*	7	woody perennial	Fabaceae
rush skeletonweed	*Chondrilla juncea*	5 to 7	perennial	Asteraceae
sicklepod	*Cassia obtusifolia*	7	perennial	Fabaceae
smartweed, Pennsylvania	*Polygonum pensylvanicum*	3 to 5	annual	Polygonaceae
sneezeweed, bitter	*Helenium amarum*	4 to 7	annual	Asteraceae
soda apple, tropical (6)	*Solanum viarum*	5 to 7	perennial	Solanaceae
sowthistle, annual	*Sonchus oleraceae*	7	annual	Asteraceae

Table 2: Weeds and Woody Plants Controlled (Cont.)
Note: Numbers in parentheses (-) refer to specific use directions for a particular weed species.

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
sowthistle, perennial	*Sonchus arvensis*	3 to 5	perennial	Asteraceae
spanishneedles	*Bidens bipinnata*	4 to 7	annual	Asteraceae
St. Johnswort, common	*Hypericum perforatum*	5 to 7	perennial	Clusiaceae
stiltgrass, Japanese	*Microstegium vimineum*	5 to 7	annual	Poaceae
starthistle, Malta (7)	*Centaurea melitensis*	3 to 5	annual	Asteraceae
starthistle, purple (7)	*Centaurea calcitrapa*	3 to 5	biennial	Asteraceae
starthistle, yellow (7)	*Centaurea solstitialis*	3 to 5	annual	Asteraceae
sunflower, common	*Helianthus annuus*	4 to 7	annual	Asteraceae
sweetclover, white	*Melilotus albus*	5 to 7	biennial	Fabaceae
sweetclover, yellow	*Melilotus officinalis*	5 to 7	biennial	Fabaceae
teasel	*Dipsacus spp.*	4 to 7	biennial	Dipsacaceae
thistle, artichoke	*Cynara cardunculus*	5 to 7	perennial	Asteracea
thistle, blessed milk	*Silybum marianum*	4 to 7	biennial	Asteraceae
thistle, bull (8)	*Cirsium vulgare*	3 to 5	biennial	Asteraceae
thistle, Canada (9)	*Cirsium arvense*	5 to 7	perennial	Asteraceae
thistle, woolly distaff	*Carthamus lanatus*	4 to 7	annual	Asteraceae
thistle, Italian	*Carduus pycnocephalus*	7	annual	Asteraceae
thistle, musk (8)	*Carduus nutans*	3 to 5	biennial	Asteraceae
thistle, plumeless (8)	*Carduus acanthoides*	3 to 5	biennial	Asteraceae
thistle, Scotch	*Onopordum acanthium*	5 to 7	biennial	Asteracea
thistle, Russian (preemergence)	*Salsola spp*	7	annual	Chenopodiaceae
tree of heaven	*Ailanthus altissima*	7	perennial	Simaroubaceae
vetch	*Vicia spp.*	3 to 7	perennial	Fabaceae
willoweed, panicle	*Epilobium brachycarpum*	5 to 7	annual	Onagraceae
wisteria	*Wisteria brachybotris*	7	woody perennial	Fabaceae
wormwood, absinth(10)	*Artemisia absinthium*	6 to 7	perennial	Asteraceae
yarrow, common	*Achillea millefolium*	7	perennial	Asteraceae

(1) **Sulfur cinquefoil or oxeye daisy:** Apply Milestone at 4 to 6 fl oz per acre to plants in the pre-bud stage of development.
(2) **Orange or yellow hawkweeds:** Apply Milestone at 4 to 7 fl oz per acre to plants in the bolting stage of development.
(3) **Diffuse, spotted, and squarrose knapweeds:** Apply Milestone at 5 to 7 fl oz per acre when plants are actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall. Plants will be controlled by mid-summer and fall applications even though plants may not show any changes in form or stature the year of application.
(4) **Russian knapweed:** Apply Milestone at 5 to 7 fl oz per acre to plants in the spring and summer at early bud to flowering stages and to dormant plants in the fall.
(5) M**ullein**: Apply to the rosette stage
(6) **Tropical soda apple:** Apply Milestone at 5 to 7 fl oz per acre at any growth stage, but application by flowering will reduce seed production potential.
(7) **Malta, purple, and yellow starthistle:** Apply Milestone at 3 to 5 fl oz per acre to plants at the rosette through bolting growth stages.
(8) **Bull, musk, and plumeless thistles:** Apply Milestone at 3 to 5 fl oz per acre in the spring and early summer to rosette or bolting plants or in the fall to seedlings and rosettes. Apply at 4 to 5 fl oz when plants are at the late bolt through early flowering growth stages. 2,4-D at 1 lb ae per acre should be tank-mixed with Milestone starting at the late bud stages
(9) **Canada thistle:** Apply Milestone at 5 to 7 fl oz per acre in the spring after all plants have fully emerged (some may be budding) until the oldest plants are in full flower stage. Use the higher rate when applying to the flower stage. Applications are also effective in the fall before a killing frost. Use higher rates for older/dense stands or for longer residual control.

(10) **Absinth wormwood:** Apply 6 to 7 fl oz per acre before wormwood is 12 inches tall. When applying by air on CRP, coverage is important and a minimum of 3 GPA is specified. Remove old duff and litter by fire or mowing for best results

(11) **Invasive knotweeds:** Japanese, Bohemian, giant knotweeds: Optimum suppression of invasive knotweeds with Milestone herbicide is obtained when applications are made to plants that are at least 3 to 4 feet tall. Results of field trials conducted in the western U.S. indicate that high volume applications (100 gpa or greater) of Milestone at 7 fl oz per acre or a spot treatment rate up to 14 fl oz per acre applied in summer will provide good control of invasive knotweeds. In the upper Midwest, mowing in summer followed by fall application of Milestone (prior to frost) provided the best control. Infestations of invasive knotweed that are mowed should be allowed to regrow to at least 3 feet in height prior to herbicide treatment. Monitoring and follow-up herbicide treatments on regrowth will be necessary to control resprouts and achieve long-term control.

(12) **Purple loosestrife:** For optimum control apply Milestone at 7 fl oz per acre plus 1 pint to 1 quart of 2,4-D amine or 1 to 2 quarts of Garlon 3A. Spot treatments may also be made by applying Milestone at 14 fl oz (see Spot treatment section of the label) with or without the addition of 2,4-D or Garlon 3A.

(13) **Fiddleneck:** For optimum control apply Milestone at 4 to 7 fl oz per acre when the plants are young and before flowering. Use higher rates if the plants are older and larger. In California optimal application timing is November through March.

For Control or Suppression of Medusahead Rye

Milestone applied broadcast at 7 to14 fl oz per acre can suppress or control medusahead rye (*Taeniatherum caput-medusae)* and downy brome *(Bromus tectorum,* also called cheatgrass*)*. The key to optimum results is the timing of application. Applications should be made in late summer prior to rains and seed germination in order to provide the best possibility of suppression or control. In general, control or suppression will be poor if any of the seeds have germinated prior to application even if they have not yet emerged through the soil surface. Tank mixes with Accord XRT II at 12 fl oz per acre, where a non-selective herbicide can be used or where desired grasses are dormant and will not be harmed, will aid in control. Spot treatment restrictions (see spot treatment section) apply for rates above 7 fl oz per acre for broadcast applications.

Control of Terrestrial Weeds Near and Up to the Water's Edge

Milestone can be used to treat terrestrial weeds that extend up to the water's edge. **Do not apply directly to water.** This product must not be used to treat vegetation standing in the water. When controlling terrestrial weed species near and up to the water's edge, take precautions to minimize incidental overspray to the adjacent water. Consult local public water control authorities before applying this product near public waters. Permits may be required to treat such areas. Apply the specified rate (listed in Table 2) of Milestone as a coarse low-pressure spray as ground broadcast or spot applications. Do not apply aerially for control of weeds growing at or near the water's edge. Spray volume should be sufficient to uniformly cover foliage. Increase the spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. It is also permissible to treat target weeds within dry non-irrigation ditches and seasonally dry transitional areas between upland and lowland sites (such as flood plains, deltas, marshes, prairie potholes, or vernal pools) but only at times when those sites are dry and are forecasted or managed by water control systems to remain dry for at least 2 weeks following application.

Use Rate Restrictions:
Do not broadcast apply more than 7 fl oz per acre of Milestone per year.

The total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications.

Woody Plant Control

Milestone may be applied to control woody plants by any application method listed on the label on any site listed.

Milestone may be applied alone or in tank-mix combinations with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated, and (2) mixing is not prohibited by the label of the registered tank mixed products. Use as directed in the Directions For Use section of the tank-mix partner. Follow Mixing Instructions.

Add Milestone to tank mixes for improved brush control on species such as alder, aspen, blackberry, boxelder, cherry, coyote brush, conifers, cottonwood, elm, maple, poplar, oak, brooms (Scotch, Spanish, French, Portuguese), gorse, hackberry, Russian and Autumn olive, salt-cedar.

Low or High Volume Foliar Applications:
For broad spectrum brush control using a foliar application, Milestone may be added to tank mixes with the following products or other products labeled for use on the intended site:

Tank Mix Product	EPA Reg. No.	Active Ingredient(s)
Accord XRT II	62719-556	Glycine, N-(phosphonomethyl)-, compd. with N-methylmethanamine (1:1)
Arsenal Powerline Herbicide	241-431	Imazapyr, isopropylamine salt
DMA 4 Herbicide	62719-3	2,4-D, dimethylamine salt
Garlon 4 Ultra	62719-527	Triclopyr, butoxyethyl ester
Remedy Ultra	62719-552	Triclopyr, butoxyethyl ester

Tank Mix Product (Cont.)	EPA Reg. No.	Active Ingredient(s)
Tordon 101 Mixture	62719-5	2,4-D triisopropanolamine salt; Picloram triisopropanolamine salt
Tordon 22K	62719-6	Picloram-potassium
Tordon K	62719-17	Picloram-potassium
Transline	62719-259	Clopyralid, monoethanolamine salt
Garlon XRT	62719-553	Triclopyr, butoxyethyl ester
Garlon 3A	62719-37	Triclopyr, triethylamine salt
Rodeo	62719-324	Glyphosate; Glyphosate-isopropylammonium

Low Volume Basal Bark Applications:
To control susceptible woody plants with stems less than 6 inches in basal diameter, apply herbicide mix (see below for rates) with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground in a manner that thoroughly wets the lower stems but not to the point of runoff. The use of a Spraying Systems Y2 nozzle or similar nozzle is recommended, which will narrow the spray pattern to target individual stems. Herbicide concentration should vary with tree diameter, bark thickness, volume used per acre, and susceptibility of species treated. Apply anytime, including the winter months, except when snow or water prevent spraying to the ground line or when stem surfaces are saturated with water.

Milestone may be used as a low volume basal treatment alone, for sensitive woody species in the Fabaceae family (legumes), or in combination with other products such as Garlon 4 Ultra, Garlon XRT, or Remedy Ultra for broader control of other sensitive woody species. Applications should not exceed the maximum use rate per acre for the site.

Mix Milestone at 0.5 to 5% v/v alone or with Garlon 4 Ultra or Garlon XRT in a commercially available basal diluent (or other oils or basal diluents as recommended by the manufacturer). The basal oil should be compatible with a water soluble herbicides such as Milestone. See Table 3 to calculate the amount of Milestone that can be applied per acre at the various volumes and rates. Make a stable tank mixture for basal bark application by first combining each product with a compatibility agent prior to final mixing in the desired ratio. If using a tank mix, mix the oil-based products such as Garlon 4 Ultra thoroughly with basal oil and add any other oil-based products before adding the water-based products. If the mixture stands for more than 30 minutes, reagitation may be required.

Oil and water based mixtures can separate over time. Long-term storage is not recommended without vigorous agitation prior to use or without a recommended compatibility agent.

Use caution when treating areas adjacent to susceptible and desirable species to avoid root uptake and possible injury when using Milestone or other soil active herbicides

Low Volume Stem Bark Band Treatment
To control susceptible woody plants (see Table 2) with stems less than 6 inches in basal diameter, mix 0.5 to 5 gallons of Milestone in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Apply the spray in a 6-inch to 10-inch wide band that completely encircles the stem. Spray in a manner that completely wets the bark, but not to the point of runoff. The treatment band may be positioned at any height up to the first major branch. For best results apply the band as low as possible. Spray mixture concentration should vary with size and susceptibility of species to be treated. Applications may be made anytime, including winter months.

Table 3:

% of Milestone in Basal Mix	Fluid ounces of Milestone by GPA (gallons per acre)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.0	1.3	2.6	3.8	5.1	6.4	7.7	9.0
1.5	1.9	3.8	5.8	7.7	9.6	11.5	13.4
2.0	2.6	5.1	7.7	10.2	12.8		
2.5	3.2	6.4	9.6	12.8			
3.0	3.8	7.7	11.5				
3.5	4.5	9.0	13.4				
4.0	5.1	10.2					
5.0	6.4	12.8					

within spot treatment labeled rate

in excess of spot treatment labeled rate

NOTE: Avoid treating high density of stems adjacent to desirable trees with roots in the treatment zone. See Table 4 for guidance on estimated volume per acre by treated stem density. Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Applications of Milestone within the root zone of desirable trees should not be made unless injury can be tolerated. Severe injury or plant death can occur if used near roses or leguminous trees such as locusts, redbud, mimosa, and caragana.

Table 4:

Estimated gallons of spray solution per acre for basal bark applications on various stem densities per acre		
Number of Stems per Acre	Volume Range (gallons per acre)	Target Spacing (feet between brush/trees)
250	1.0 to 1.7	8.4
500	2.0 to 3.3	5.9
750	3.0 to 5.0	4.9
1000	4.0 to 6.6	4.2
1250	5.0 to 8.3	3.8
1500	5.9 to 9.9	3.4

Cut surface

Apply Milestone in the cut surface applications listed below for control of susceptible tree species such as legumes like albizia, mimosa, locust, etc. Mixtures of Milestone and Garlon 3A or Garlon 4 Ultra may be effective on species other than legumes such as elm, maple, oak and conifers.

Cut surface applications may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples in the spring.

Cut-Stump Treatment

Apply Milestone as a 10% dilution v/v in water, by spraying or painting all the exposed cambium layer on the freshly cut surface. The cambium area next to the bark is the most vital area to wet.

With Tree Injector Method

Apply by injecting 1 milliliter of 10% v/v Milestone in water through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.

With Hack and Squirt Method

Make cuts around the tree trunk at a convenient height with a hatchet or similar equipment so that the cuts overlap slightly and make a continuous circle around the trunk. Spray 1 milliliter of 10% v/v Milestone in water into the pocket created between the bark and the inner stem/trunk by each cut.

With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. The frill should allow for the herbicide to remain next to the inner stem and absorb into the plant. Wet the cut surface with 10% v/v Milestone in water.

For use in Hawaii only:
Incision Point Application (IPA) also known as Tree Injection or Hack and Squirt

For control of susceptible tree species such as albizia and other legumes and susceptible tree species, make cuts around the tree trunk at a convenient height with a machete, hatchet, or similar equipment so that the cuts are about 6 inches apart between centers. Inject 0.5 to 1 milliliter of undiluted Milestone into the pocket created between the bark and the inner stem/trunk by each cut as soon as possible after cutting. The cambium area next to the bark is the most vital area to wet.

Preemergent Weed Control

Typically Milestone is used as a post emergent herbicide but it has preemergent activity on susceptible weeds. Use Milestone as a preemergence spray prior to weed seed germination. Control will depend upon species susceptibility, application timing, and environmental conditions such as precipitation following application. When applied at rates lower than 7 fl oz per acre, Milestone can provide short-term control of some susceptible weeds, but when applied at 7 fl oz (broadcast) or 14 fl oz (spot treatment), weed control is extended.

Best results for use as a preemergent application for total vegetation control are obtained if Milestone at 7 fl oz per acre is tank mixed with other herbicides to broaden the weed spectrum and to control grasses. If grasses and broadleaf weeds tolerant to Milestone are present at the time of application or will germinate on the site, then tank mixtures with other herbicides such as the products listed below, or flumioxazin, diuron, or other herbicides labeled for total vegetation control applications.

Tank Mix Product	EPA Reg. No.	Active Ingredient(s)
Accord XRT II	62719-556	Glycine, N-(phosphonomethyl)-, compd. with N-methylmethanamine (1:1)
Rodeo	62719-324	Glyphosate; Glyphosate-isopropylammonium
Dimension 2EW	62719-542	Dithiopyr
Dimension EC	62719-426	Dithiopyr
Oust X Herbicide	432-1552	Sulfometuron
Esplanade 200 SC	432-1516	Indaziflam

SPOT TREATMENTS FOR AREAS SUCH AS SUBJECT POLES, SUBSTATIONS, AND OTHER SMALL AREAS

Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year to small spots for clearing around utility subject poles to help prevent fire damage, on small substations, and other spot areas. To prevent misapplication, spot treatments should be applied with a calibrated sprayer.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent permitted by law, otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

Warranty Disclaimer

Corteva Agriscience warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. To the extent permitted by law, Corteva Agriscience MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Corteva Agriscience or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Corteva Agriscience's election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

To the extent permitted by law, Corteva Agriscience shall not be liable for losses or damages resulting from handling or use of this product unless Corteva Agriscience is promptly notified of such loss or damage in writing. To the extent permitted by law, in no case shall Corteva Agriscience be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Corteva Agriscience or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

EPA accepted 06/02/2020

AMINOPYRALID	GROUP	4	HERBICIDE

CORTEVA™
agriscience

Milestone®

HERBICIDE

- **For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines on:**
  - **rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP);**
  - **non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses;**
  - **natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools;**
  - **including grazed areas in and around these sites.**

***Hay from grass treated with Milestone within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.**

Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

Active Ingredient:	
Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-	40.6%
Other Ingredients	59.4%
Total	100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) - 21.1% - 2 lb/gal

Keep Out of Reach of Children

CAUTION

Agricultural Use Requirements

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

Refer to inside of label booklet for Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs, or clothing.

EPA Reg. No. 62719-519

EPA Est. 62719-MI-002
CD02-879-022

Produced for
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

NET CONTENTS 2.5 GAL

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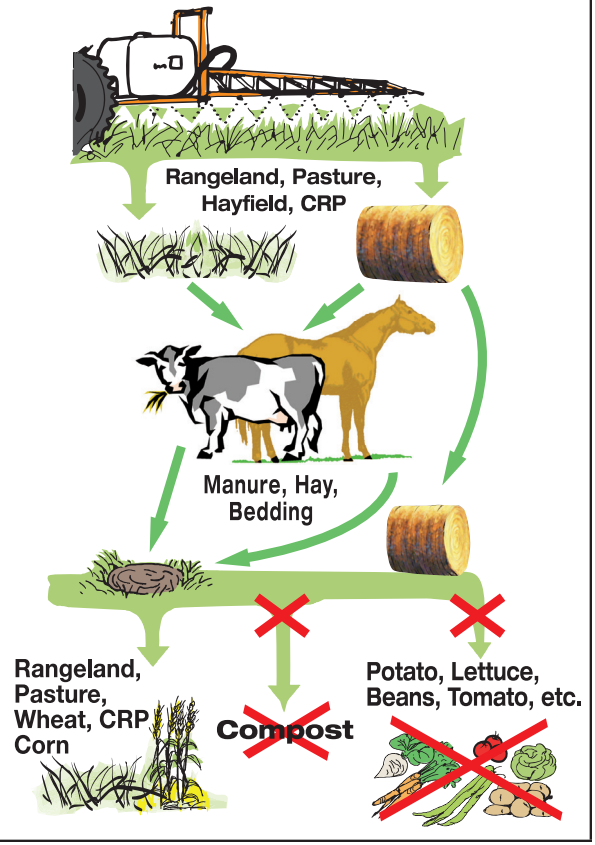
IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section ***"Restrictions in Hay or Manure Use."***
- It is mandatory to follow the ***"Use Precautions and Restrictions"*** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Corteva Agriscience representative if you do not understand the Use Precautions and Use Restrictions. **Call 1-800-258-3033 Customer Information Group.**

Forage and Manure Management



CD02-879-022

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CORTEVA™ agriscience

Contents In Plastic
Do Not Cut To Open

ACRC

4G/Y31.5/S/21
USA/+AA2111

CORTEVA™ agriscience

Milestone®

HERBICIDE

AMINOPYRALID	GROUP	4	HERBICIDE

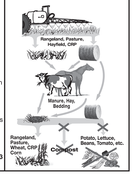
- **For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines on:**
  - **rangeland, permanent grass pastures (including grasses grown for hay*); Conservation Reserve Program (CRP);**
  - **non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses;**
  - **natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools;**
  - **including grazed areas in and around these sites.**

***Hay from grass treated with Milestone within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.**

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section ***"Restrictions in Hay or Manure Use."***
- It is mandatory to follow the ***"Use Precautions and Restrictions"*** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Corteva Agriscience representative if you do not understand the Use Precautions and Use Restrictions. **Call 1-800-258-3033 Customer Information Group.**

Forage and Manure Management



Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

Active Ingredient:
Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro- 40.6%
Other Ingredients 59.4%
Total 100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3, 6-dichloro-) - 21.1% - 2 lb/gal

Keep Out of Reach of Children

CAUTION

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

Refer to inside of label booklet for Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs, or clothing.

EPA Reg. No. 62719-519 EPA Est. 62719-MI-002 C20D-879-022

™®Trademarks of Corteva Agriscience and its affiliated companies

Produced for
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

2 X 2.5 GAL

CORTEVA™ agriscience

Milestone®

HERBICIDE

2 X 2.5 GAL

(01) 5 06 62974 58106 7

CORTEVA™ agriscience

Milestone®

HERBICIDE

2 X 2.5 GAL

CORTEVA™ agriscience

Milestone®

HERBICIDE

2 X 2.5 GAL

BOX MFG. DATE:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

February 4, 2021

Elaine Bauer
US Regulatory Specialist
Dow AgroSciences LLC (Corteva AgriScience, LLC)
9330 Zionsville Road
Indianapolis, IN 46268

Subject: Notification per PRN 98-10 – Add alternate brand name and correct typographical error on page 14 to "baleage"
Product Name: Milestone
EPA Registration Number: 62719-519
Application Date: October 26, 2020
Decision Number: 568255

Dear Ms. Bauer:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the above referenced product. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10.

The label submitted with the application has been stamped "Notification" and will be placed in our records. The alternate brand name, **"Ironside"** has been added to the product record.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

If you have any questions, you may contact Jamie Harrington by email at harrington.jamie@epa.gov.

Sincerely,

Mindy Ondish

Mindy Ondish
Product Manager 23
Herbicide Branch
Registration Division (7505P)
Office of Pesticide Programs

Milestone®

EPA Reg. No. 62719-519

Registration Notes

Source label based upon EPA-accepted label text dated June 2, 2020.

The following changes are made by EPA Notification:

- Added new alternate brand name “Ironside”
- Corrected typographical error in pasture and rangeland restrictions: “baylage” to “baleage”

(Base label):

AMINOPYRALID	GROUP	4	HERBICIDE

Milestone®

[Alternate Brand Name: Ironside™]

SPECIALTY HERBICIDE

- **For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines on:**
  - **rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP);**
  - **non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses;**
  - **natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools;**
  - **including grazed areas in and around these sites.**

- **For control of annual and perennial broadleaf weeds in wheat (including spring wheat, winter wheat, and durum) and field corn.**

***Hay from grass treated with Milestone within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.**

NOTIFICATION

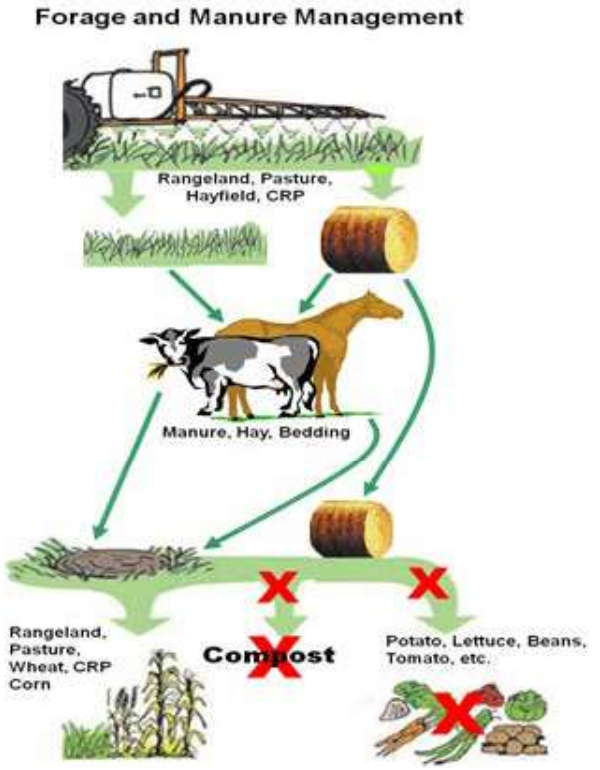
62719-519

The applicant has certified that no changes, other than those reported to the Agency have been made to the labeling. The Agency acknowledges this notification by letter dated:

02/04/2021

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section ***"Restrictions in Hay or Manure Use."***
- It is mandatory to follow the ***"Use Precautions and Restrictions"*** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. **Call 1-800-258-3033 Customer Information Group**.



Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

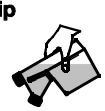
Active Ingredient:
Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro- 40.6%
Other Ingredients 59.4%
Total 100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) - 21.1% - 2 lb/gal

[Editor's Note: The following Container Use Directions should be included on the label for product that is packaged in a 1 quart Tip and Dispense bottle]

Container Use Directions

1 - Tip



Tilt container to angle as shown and fill head to desired amount – use vertical scale for measuring. Container should be closed.

2 - Level

Hold container up-right and check the amount for accuracy. Add or subtract as needed, using pour-back scale as guide.

3 - Dipense

Remove cap on head and pour into sprayer or other devices. No fluid will pour from the main container. Replace cap for storage in sealed condition.

Keep Out of Reach of Children

CAUTION

Precautionary Statements

Hazard to Humans and Domestic Animals

Causes Moderate Eye Irritation

Avoid contact with eyes or clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

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.

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.

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. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

Do not apply directly to water. Take care to minimize the incidental overspray along the shoreline when applying to terrestrial plants at the water's edge or to water in areas where surface water is present. Do not apply directly to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Agricultural Use Requirements

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

Nonrefillable containers 5 gallons or less:

Storage and Disposal

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

Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Open dumping is prohibited.
Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **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 1/4 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. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers larger than 5 gallons:

Storage and Disposal

Do not contaminate water, food, feed, or fertilizer by storage or disposal.
Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.
Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Open dumping is prohibited.
Container Handling: 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 refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Nonrefillable containers larger than 5 gallons:

Storage and Disposal

Do not contaminate water, food, feed, or fertilizer by storage or disposal.
Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.
Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Open dumping is prohibited.
Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.
Triple rinse or pressure 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. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refer to label booklet for Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs, or clothing.

EPA Reg. No. 62719-519 EPA Est. _____

Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

NET CONTENTS _____

(Booklet cover / shipping container):

AMINOPYRALID	GROUP	4	HERBICIDE

Milestone®

[Alternate Brand Name: Ironside™]

SPECIALTY HERBICIDE

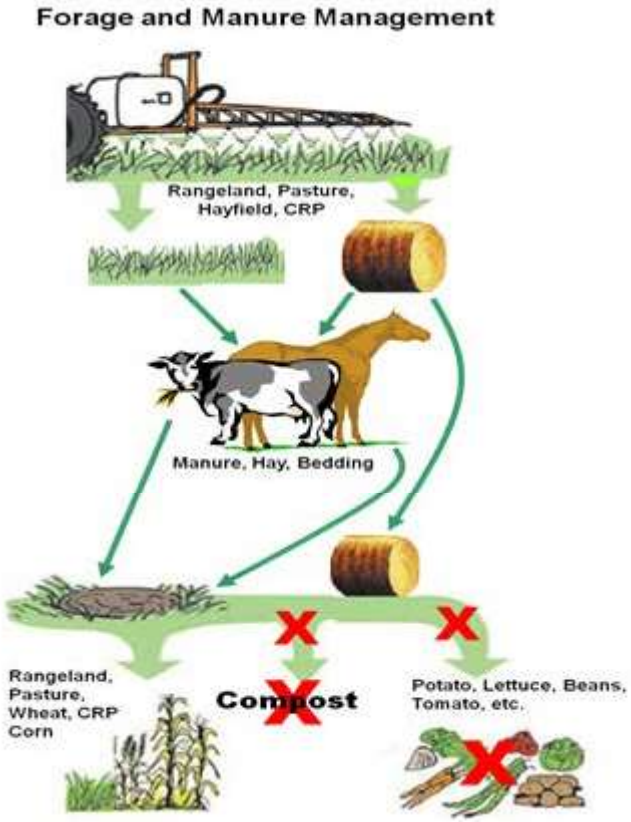
- **For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines on:**
  - **rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP);**
  - **non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, unimproved rough turf grasses;**
  - **natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools;**
  - **including grazed areas in and around these sites.**

- **For control of annual and perennial broadleaf weeds in wheat (including spring wheat, winter wheat, and durum) and field corn.**

***Hay from grass treated with Milestone within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.**

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section **"*Restrictions in Hay or Manure Use*."**
- It is mandatory to follow the **"*Use Precautions and Restrictions*"** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. **Call 1-800-258-3033 Customer Information Group**.



Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

Active Ingredient:	
Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-	40.6%
Other Ingredients	59.4%
Total	100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) - 21.1% - 2 lb/gal

Keep Out of Reach of Children

CAUTION

Agricultural Use Requirements

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

Refer to inside of label booklet for Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs, or clothing.

EPA Reg. No. 62719-519 EPA Est. _____

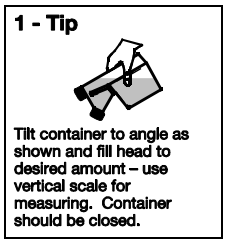
Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

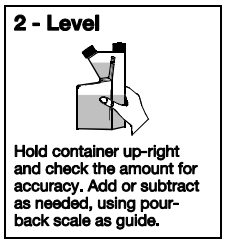
NET CONTENTS _____

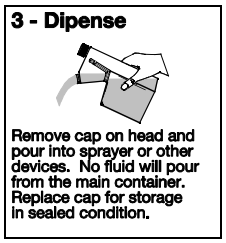
(Booklet page 1 through end):

[Editor's Note: The following Container Use Directions should be included on the label for product that is packaged in a 1 quart Tip and Dispense bottle]

Container Use Directions







Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Causes Moderate Eye Irritation

Avoid contact with eyes or clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

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.

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.

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. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

Do not apply directly to water. Take care to minimize the incidental overspray along the shoreline when applying to terrestrial plants at the water's edge or to water in areas where surface water is present. Do not

apply directly to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Directions for Use

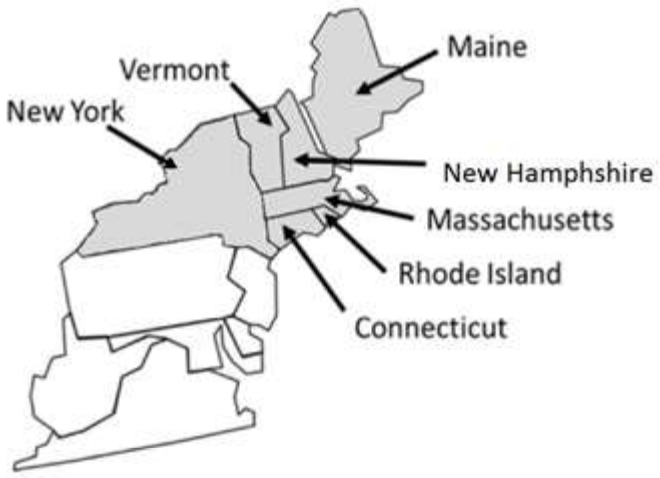
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

This product is not intended for reformulation or repackaging into other end-use products.

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.

Not for Sale, Sale into, Distribution, and/or Use in Nassau and Suffolk counties of New York State.

Not for use on pastures in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. All other labeled uses are permitted in these states including grazed areas in and around these sites.



Grey = states where use in pasture is not permitted

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 48 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
- Chemical-resistant gloves made of any waterproof material as polyethylene or polyvinyl chloride
- Shoes plus socks
- Protective eyewear

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 does not pertain to non-agricultural use on sites, such as, rangeland, permanent grass pastures, or non-cropland. See the Agricultural Use Requirements section below for information where the WPS applies.

Entry Restrictions for Non-WPS Uses: For applications on rangeland and permanent grass pastures (not harvested for hay) and non-cropland areas, do not enter or allow worker entry into treated areas until sprays have dried.

Storage and Disposal

Do not contaminate water, food, feed, or fertilizer by storage or disposal.
Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.
Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Open dumping is prohibited.

Nonrefillable containers 5 gallons or less:
Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **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 1/4 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. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers larger than 5 gallons:
Container Handling: 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 refiller. To clean the container before final disposal, empty

the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Nonrefillable containers larger than 5 gallons:
Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.
Triple rinse or pressure 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. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Resistance Management Guidelines

This product contains aminopyralid, a Group 4 synthetic auxin. Appropriate resistance-management strategies should be followed.

- Development of plant populations resistant to this herbicide mode of action is usually not a problem on rangeland, permanent grass pastures, Conservation Reserve Program (CRP), or non-cropland sites since these sites receive infrequent pesticide applications.
- In croplands, use an effective integrated pest management (IPM) program, integrating tillage or other mechanical methods, crop rotation, or other cultural control methods into weed control programs whenever practical.
- Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its labeled rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area.
- Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed.
- Contact your extension specialist, certified crop consultant, or a Dow AgroSciences customer service representative 1-800-258-3033 for the latest resistance-management information.

Use Precautions

- Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of Milestone. Injury to crops may result if treated soil and/or runoff water containing Milestone is washed or moved onto land used to produce crops. Exposure to Milestone may injure or kill susceptible crops and other plants such as grapes, soybeans, tobacco, sensitive ornamentals.

- **Grass revegetation**:
    - Milestone can be used to control broadleaf plants in grass revegetation programs. Consult Dow AgroSciences literature for more details about Milestone applications and grass stand establishment.

- **Application before seeding grasses**
    - Milestone can be applied to control broadleaf weeds prior to grass planting. Grass seed germination and seedling development can be adversely effected by many factors such as seed

viability and seedling vigor, soil condition (sub-optimal soil temperatures or soil water content), weather after planting, seedbed preparation and seed placement, disease, insects, or animals. Milestone applications will help to reduce competition from weeds and improve the chance for successful grass stand establishment. Some grass species are more sensitive to Milestone; consult Dow AgroSciences literature for more details.

- **Postemergence applications on grass:** During the season of establishment, Milestone should be applied only after perennial grasses are well established (have developed a good secondary root system and show good vigor). Most perennial grasses are tolerant to Milestone at this stage of development. Milestone may suppress certain established grasses such as smooth bromegrass (*Bromus inermis*), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition.

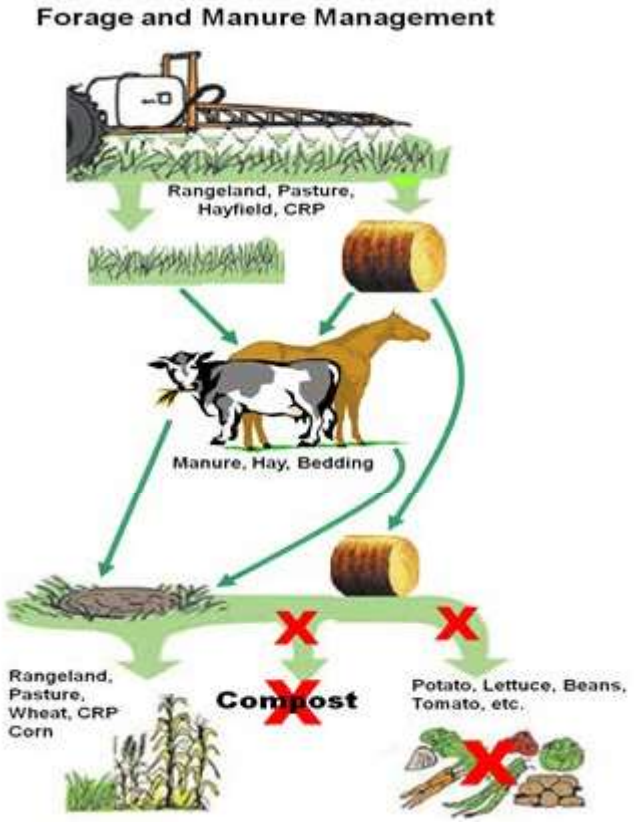
- **Seeding Broadleaf Plants (Forbs) and Wildflowers**
  Milestone can be applied in the summer to control broadleaf weeds prior to forb planting. Forbs can be seeded 90 days after a summer application as a dormant fall planting or the following spring. Consult Dow AgroSciences literature for details.

- **Field Bioassay Instructions:** In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern, or drainage. The field bioassay can be initiated one year after the last application of aminopyralid in that field. Observe the test crop for symptoms of herbicidal activity such as poor stand (effect on seed germination), chlorosis (yellowing), epinasty, necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the intended rotational crop; plant only to wheat, corn, forage grasses, native grasses, or grasses grown for hay.

Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. Call 1-800-258-3033 for more information.

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section **"*Restrictions in Hay or Manure Use*."**
- It is mandatory to follow the **"*Use Precautions and Restrictions*"** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the Use Precautions and Use Restrictions. **Call 1-800-258-3033 Customer Information Group**.



Pasture and Rangeland Restrictions

- **Do not use grasses treated with Milestone in the preceding 18 months for hay intended for export outside the United States.**
- **Hay from areas treated with Milestone in the preceding 18 months CANNOT be distributed or made available for sale off the farm or ranch where harvested unless allowed by supplemental labeling.**
- **Hay from areas treated with Milestone in the preceding 18 months CANNOT be used for silage, haylage, ~~baylage~~baleage, and green chop unless allowed by supplemental labeling.**
- **Do not move hay made from grass treated with Milestone within the preceding 18 months off farm unless allowed by supplemental labeling.**
- **Do not use hay or straw from areas treated with Milestone within the preceding 18 months or manure from animals feeding on hay treated with Milestone in compost.**
- **Do not use grasses treated with Milestone in the preceding 18 months for seed production.**

Restrictions for All Uses

Maximum Application Rate: On all labeled use sites, do not broadcast apply more than 7 fl oz per acre of Milestone per year. The total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product around public waters. State or local public agencies may require permits.

- **Avoiding Injury to Non-Target Plants:** Do not aerially apply Milestone within 50 feet of a border downwind (in the direction of wind movement), or allow spray drift to come in contact with any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Read and consider the Spray Drift Management and Aerial Drift Reduction Advisory to help minimize the potential for spray drift.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not contaminate water intended for irrigation or domestic purposes.** Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes.
- Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.
- Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Do not apply Milestone within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses and leguminous trees such as locusts, redbud, mimosa, and caragana.
- Do not treat frozen soil where runoff could damage sensitive plants.

- **Grazing and Haying Restrictions:** There are no restrictions on grazing or grass hay harvest following application of Milestone at labeled rates. Cutting hay too soon after spraying weeds will reduce weed control. Wait 14 days after herbicide application to cut grass hay to allow herbicide to work. Do not transfer grazing animals from areas treated with Milestone to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture. Otherwise, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants.

- **Grazing Poisonous Plants:** Herbicide application may increase palatability of certain poisonous plants. Do not allow livestock to graze treated areas until poisonous plants are dry and no longer palatable to livestock.

- **Restrictions in Hay or Manure Use:**
  - Do not use aminopyralid-treated plant residues, including grass, wood plants, trees, hay, or straw from areas treated within the preceding 18 months, in compost, mulch wood chips, or mushroom spawn.
  - Do not use manure from animals that have eaten aminopyralid-treated forage or hay within the previous 3 days in compost, mulch, or mushroom spawn. Livestock must have 3 days of eating non-aminopyralid-treated materials in order to clear their system of aminopyralid. Do not use aminopyralid-treated plants in areas where commercially grown mushrooms or susceptible broadleaf plants may be grown.
  - Do not spread manure from animals that have consumed aminopyralid-treated forage or hay within the previous 3 days on land used for growing susceptible broadleaf crops.
  - Manure from animals that have consumed aminopyralid-treated forage or hay within the previous 3 days may only be used on areas used for pasture, grass grown for seed, wheat, and corn.

- Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields or areas treated with aminopyralid or manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
- Do not plant a broadleaf crop in fields or areas treated in the previous year with manure from animals that have consumed aminopyralid-treated forage or hay until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
- To promote herbicide decomposition, plant residues should be evenly incorporated in the surface soil or burned. Breakdown of aminopyralid in plant residues or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation.

- **Crop Rotation:** Do not rotate to any crop from rangeland, permanent pasture, or CRP acres within one year following treatment. Cereals and corn can be planted one year after treatment. Broadleaf crops are sensitive to aminopyralid residues in the soil and prediction of crop safety by field bioassay (see instructions below) is the BEST way to determine planting options. Broadleaf crops such as canola, flax, and alfalfa can require **at least** 2 to 3 years depending on the crop and environmental conditions. More sensitive crops such as soybeans, tobacco, peanuts, potatoes, and peas may require a longer plant-back interval and should not be planted until a field bioassay shows that the level of aminopyralid present in the soil will not adversely affect that broadleaf crop.

Spray Drift Management

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

Avoid application under conditions that may allow spray drift because very small quantities of spray, which may not be visible, may injure susceptible crops. This product should be applied only when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, non-target crops, and other plants) is minimal (e.g., when wind is blowing away from the sensitive areas). A drift control aid may be added to the spray solution to further reduce the potential for drift. If a drift control aid is used, follow the use directions and precautions on the manufacturer's label. Do not use a thickening agent with Microfoil, Thru-Valve booms, or other spray delivery systems that cannot accommodate thickened spray solutions.

Importance of Droplet Size
An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Ground Equipment: With ground equipment, spray drift can be lessened by keeping the spray boom as low as possible; by applying 10 gallons or more of spray per acre; by keeping the operating spray pressures at the manufacturer's specified minimum pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to thermal inversions. Direct sprays no higher than the tops of target vegetation and keep spray pressures low enough to provide coarse spray droplets to minimize drift.

Aerial Application: Avoid spray drift at the application site. The interaction of many equipment-related and weather-related factors determine the potential for spray drift. Users are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The boom length must not exceed 75% of the fixed wing span and must be located at least 8 to 10 inches below the trailing edge of the fixed wing; the boom length must not exceed 85% of the rotary blade.

2. Nozzles should be pointed backward parallel with the air stream or not pointed downward more than 45 degrees.

State and local regulations must be followed.

The applicator should be familiar with, and take into account, the information covered in the following **Aerial Drift Reduction Advisory**. This information is advisory in nature and does not supersede mandatory label requirements.

Aerial Drift Reduction Advisory

Information on Droplet Size: The most effective way to reduce 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 (see Wind, Temperature and Humidity, and Temperature Inversions).

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 specified pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that will provide uniform coverage.
- **Nozzle Orientation** - Orient nozzles so that the spray is released parallel to the airstream to produce larger droplets than other orientations. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan for airplanes or 85% of rotor blade diameter for helicopters.

Application Height: Applications should not be made 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.

Swath Adjustment: 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. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors including droplet size and equipment type determine drift potential at any given speed. Application should be avoided when wind speeds are below 2 mph due to variable wind direction and high inversion potential. **Note**: Local terrain such as valleys and ravines can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: 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.

Temperature Inversions: Applications should not occur during a local, low-level 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 the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sprayer Clean-Out Instructions

It is recommended to use separate spray equipment on highly sensitive crops such as tobacco, soybeans, potatoes, peanuts, and tomatoes.
Do not use spray equipment used to apply Milestone for other applications to land planted to, or to be planted to, broadleaf plants unless it has been determined that all residues of this herbicide have been removed by thorough cleaning of equipment.

Equipment used to apply Milestone should be thoroughly cleaned before reusing to apply any other chemicals as follows:

1. Rinse and flush application equipment thoroughly after use. Dispose of rinse water in non-cropland area away from water supplies.
2. Rinse a second time, adding 1 quart of household ammonia or tank cleaning agent for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15 to 20 minutes). Let the solution stand for several hours, preferably overnight.
3. Flush the solution out of the spray tank through the boom.
4. Rinse the system twice with clean water, recirculating and draining each time.
5. Spray nozzles and screens should be removed and cleaned separately.

Do not apply this product with mist blower systems that deliver very fine spray droplets. Use of mist blower equipment can reduce control achieved with the herbicide and increase spray drift potential.

Use Information

Apply the specified rate of Milestone as a coarse low-pressure spray. Do not apply this product with mist blower systems that deliver very fine spray droplets. Spray volume should be sufficient to uniformly cover foliage or intended application site. Increase the spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. To enhance foliage wetting and coverage, a non-ionic agricultural surfactant or other adjuvant may be added to the spray mixture as specified by the adjuvant label.

Milestone may be applied by ground or aerial application equipment on any registered use site specified on this label.

Ground Broadcast Application: Higher spray volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage.

Aerial Broadcast Application: Do not apply less than 2 gallons per acre total spray volume. Five gallons per acre or greater will generally provide better coverage and better control, particularly in dense and/or tall foliage.

High-Volume Foliar Application: High volume foliar treatments may be applied at rates equivalent to a maximum of 7 fl oz per acre per year. Use sufficient spray volume to thoroughly and uniformly wet foliage and stems.

For basal bark and cut stubble and all types of cut surface applications, see woody plant section.

Low-Volume Foliar Treatment
To control susceptible woody plants, use Milestone alone or in tank mixes with other herbicides in water. The spray concentration of Milestone tank mixes and total spray volume per acre should be adjusted according to the size and density of target woody plants and type of spray equipment used. With low-volume application,

use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars.

For best results, an adjuvant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck-mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Spot Application: Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications. Spray volume should be sufficient to thoroughly and uniformly wet the weed foliage, but not to the point of runoff. Repeat treatments may be made, but the total amount of Milestone applied must not exceed 7 fl oz per acre per year. To prevent misapplication, spot treatments should be applied with a calibrated sprayer with a known volume per acre. Table 1 shows Milestone amount to mix for various sprayer outputs in gallons per acre (GPA).

Table 1: Amount of Milestone **(in mL)** to mix in **1 gallon of water**

Gallons per acre	**Milestone amount (in mL) to mix to achieve target application rates**		
GPA	**5 fl oz/a**	**7 fl oz/a**	**14 fl oz/a**
20	7.5	10.5	21.0
30	5.0	7.0	14.0
40	3.8	5.3	10.5
50	3.0	4.2	8.4
60	2.5	3.5	7.0
70	2.1	3.0	6.0
80	1.9	2.6	5.3
90	1.7	2.3	4.7
100	1.5	2.1	4.2

Use a syringe to measure cc

Note: Table 1 above shows mixes for various sprayer outputs in gallons per acre (GPA).

Conversions:

1 tsp = 5 mL 30 ml = 1 fluid ounce 1 cc = 1 mL
3 tsp = 1 Tbsp 2 Tbsp = 1 fluid ounce

Mixing Instructions

Mixing with Water: To prepare the spray, add about half the required amount of water in the spray tank. Then, with agitation, add the specified amount of Milestone and other herbicides (if tank mixing). Finally, with continued agitation, add the rest of the water and additives such as adjuvants, surfactants, or drift control and deposition aids.

Addition of Surfactants or Adjuvants on All Labeled Use Sites: The addition of a high quality non-ionic surfactant (of at least 80% active principal) or adjuvant at 0.25 to 0.5% volume per volume (1 to 2 quarts per 100 gallons of spray) is recommended to enhance herbicide activity under adverse environmental conditions (such as, high temperature, low relative humidity, drought conditions, dusty plant surfaces) or when weeds are heavily pubescent or more mature.

Tank Mixing with Other Herbicides: Milestone may be applied in tank mix combination with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated, (2) mixing is not prohibited by the label of the tank mix product(s), and (3) that the tank

mix combination is physically compatible (see tank mix compatibility testing below). When tank mixing, use only in accordance with the restrictions, precautions, and limitations on the respective product labels.

- It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.
- Do not exceed specified application rates. If products containing the same active ingredient are mixed, do not exceed the maximum allowable active ingredient use rates.
- For direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility.
- Always perform a compatibility test (jar test) to ensure the compatibility of products to be used in tank mixture.

Tank Mix Compatibility Testing: Perform a jar test prior to mixing in a spray tank to ensure compatibility of Milestone and other pesticides or carriers. Use a clear glass jar with lid and mix ingredients in the same order and proportions as will be used in the spray tank. The mixture is compatible if the materials mix readily when the jar is inverted several times. The mixture should remain stable after standing for 30 minutes or, if separation occurs, should readily remix if agitated. An incompatible mixture is indicated by separation into distinct layers that do not readily remix when agitated, and/or the presence of flakes, precipitates, gels, or heavy oily film in the jar. Use of an appropriate compatibility aid may resolve mix incompatibility. If the mixture is incompatible do not use that tank mix partner in tank mixtures.

Invert Emulsion Spray Mixtures
Milestone can be applied in an invert emulsion using oil and an appropriate inverting agent. Follow label directions of the inverting agent.

Mixing with Sprayable Liquid Fertilizer Solutions: Milestone is usually compatible with liquid fertilizer solutions. It is anticipated that Milestone will not require a compatibility agent for mixing with fertilizers; however, a compatibility test (jar test) should be made prior to mixing. Jar tests are particularly important when a new batch of fertilizer or pesticide is used, when water sources change, or when tank mixture ingredients or concentrations are changed. Compatibility may be determined by mixing the spray components in the desired order and proportions in a clear glass jar before large scale mixing of spray components in the spray tank.

Note: The lower the temperature of the liquid fertilizer, the greater the likelihood of mixing problems. Use of a compatibility aid may be required if Milestone is mixed with a 2,4-D-containing product and liquid fertilizer. **Mixing Milestone and 2,4-D in N-P or N-P-K liquid fertilizer solutions is more difficult than mixing with straight nitrogen fertilizer and should not be attempted without first conducting a successful compatibility jar test.** Agitation in the spray tank must be vigorous to be comparable with jar test agitation. Apply the spray mixture the same day it is prepared while maintaining continuous agitation. Rinse the spray tank thoroughly after use.

Note: Foliar-applied liquid fertilizers themselves can cause yellowing of the foliage of forage grasses and other vegetation.

Use Rates and Timing

Milestone may be applied as a broadcast spray by ground or aerial equipment or as a spot application to control weeds including, but not limited to, those listed on this label. When a rate range is given, use the higher rate to control weeds at advanced growth stages or when under less-than-favorable growing conditions. For optimum uptake and translocation of Milestone, avoid mowing, haying, shredding, burning, or soil disturbance in treated areas for at least 14 days following application.

Milestone provides post emergence control and preemergence control of emerging seedlings of susceptible weeds and re-growth of certain perennial weeds following application. Preventing establishment of weeds will depend upon application rate, season of application, and environmental conditions after application.

Milestone can provide long-term control of susceptible weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term weed control is most effective where grass vegetation is allowed to recover from overgrazing, drought, etc., and compete with weeds.

Milestone can be an important component of integrated vegetation management programs designed to renovate or restore desired plant communities. To maximize and extend the benefits of weed control provided by Milestone, it is important that other vegetation management practices, including proper grazing management, biological control agents, replanting, fertilization, prescribed fire, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired plant communities. Agricultural and natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs.

Plants Controlled

The following weeds and woody plants will be controlled with the rates of Milestone indicated below in Table 2. For best results, most weeds and woody plants should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate in the rate range when growing conditions are less than favorable or when weed foliage is tall and dense, or when optimal longer term residual control is desired. Milestone also provides preemergence control of germinating seeds or seedlings of susceptible weeds following application.

Table 2: Weeds and Woody Plants Controlled
Note: Numbers in parentheses (-) refer to specific use directions for a particular weed species.

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
amaranth, spiny	*Amaranthus spinosus*	4 to 7	annual	Amaranthaceae
bedstraw	*Galium spp.*	4 to 7	perennial	Rubiaceae
beggarticks	*Bidens spp.*	4 to 7	annual	Asteracea
broomweed, annual	*Amphiachyris dracunculoides*	4 to 7	annual	Asteraceae
burdock, common	*Arctium minus*	4 to 7	biennial	Asteraceae
buttercup, hairy	*Ranunculus sardous*	4 to 7	annual	Ranunculaceae
buttercup, tall	*Ranunculus acris*	4 to 7	perennial	Ranunculaceae
buttercup spp	*Ranunculus spp*	4 to 7	various	Ranunculaceae
camelthorn	*Alhagi pseudalhagi*	5 to 7	perennial	Fabaceae
cat's ear, common	*Hypochaeris radicata*	5 to 7	perennial	Asteracea
cat's ear	*Hypochaeris spp*	5 to 7	perennial	Asteracea
chamomile, scentless	*Matricaria inodora*	4 to 7	annual	Asteraceae
chicory	*Cichorium intybus*	4 to 6	perennial	Asteraceae
chickweed	*Stellaria media*	7	annual	Caryophyllaceae
cinquefoil, sulfur (1)	*Potentilla recta*	4 to 7	perennial	Rosaceae
cocklebur	*Xanthium strumarium*	3 to 5	annual	Asteraceae
clover	*Trifolium spp.*	5 to 7	perennial	Fabaceae
crazyweed	*Oxytropisp*	5 to 7	perennial	Fabaceae
croton, tropic	*Croton glandulosus*	3 to 5	annual	Euphorbiaceae

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
crownvetch	*Securigera varia*	5 to 7	perennial	Fabaceae
cudweed, purple	*Gamochaeta purpurea*	4 to 7	annual	Asteraceae
daisy, oxeye (1)	*Leucanthemum vulgare*	4 to 7	perennial	Asteraceae
dock, curly	*Rumex crispus*	4 to 7	perennial	Polygonaceae
evening primrose, cutleaf	*Oenothera laciniata*	4 to 7	annual	Onagraceae
fiddleneck	*Amsinckia spp*	4 to 7	annual	Boraginaceae
fireweed	*Epilobium angustifolium*	5 to 7	perennial	Onagraceae
fleabane, flax-leaf	*Conyza bonariensis*	4 to 7	annual	Asteraceae
fleabane, hairy	*Conyza bonariensis*	5 to 7	annual/ biennial	Asteraceae
hawkweed, orange (2)	*Hieracium aurantiacum*	4 to 7	perennial	Asteraceae
hawkweed, yellow (2)	*Hieracium caespitosum*	4 to 7	perennial	Asteraceae
henbane, black	*Hyoscyamus niger*	5 to 7	annual/ biennial	Solanaceae
henbit	*Lamium amplexicaule*	5 to 7	annual/ biennial	Lamiaceae
hogweed, giant	*Heracleum mantegazzianum*	7	perennial	Apiaceae
horsenettle, Carolina	*Solanum carolinense*	4 to 7	perennial	Solanaceae
horseweed (marestail)	*Conyza canadensis*	4 to 7	annual	Asteraceae
ironweed, tall	*Vernonia gigantea*	5 to 7	perennial	Asteraceae
ironweed, western	*Vernonia baldwinii*	7	perennial	Asteraceae
knapweed, diffuse (3)	*Centaurea diffusa*	5 to 7	biennial/ perennial	Asteraceae
knapweed, meadow	*Centaurea debeauxii*	5 to 7	perennial	Asteraceae
knapweed, Russian (4)	*Acroptilon repens*	5 to 7	perennial	Asteraceae
knapweed, spotted (3)	*Centaurea stoebe*	5 to 7	biennial/ perennial	Asteraceae
knapweed, squarrose	*Centaurea virgata*	5 to 7	biennial/ perennial	Asteraceae
knapweeds	*Centaurea spp.*	5 to 7	biennial/ perennial	Asteraceae
knotweeds, Japanese, bohemian (11)	*Reynoutria japonica*	7 to 14	perennial	Polygonaceae
kudzu	*Pueraria montana*	7	perennial	Fabaceae
lady's thumb	*Polygonum persicaria*	3 to 5	annual	Polygonaceae
lambsquarters	*Chenopodium album*	5 to 7	annual	Chenopodiaceae
lespedeza, annual	*Lespedeza striata*	5 to 7	annual	Fabaceae
licorice, wild	*Glycyrrhiza lepidota*	7	perennial	Fabaceae
locoweed	*Astragalus spp.*	5 to 7	perennial	Fabaceae
locust, black	*Robinia pseudoacacia*	7	woody perennial	Fabaceae
locust, honey	*Gleditsia triacanthos*	7	woody perennial	Fabaceae
loosestrife, purple (12)	*Lythrum salicaria*	7 to 14	perennial	Lythraceae
mayweed, scentless	*Tripleurospermum perforate*	4 to 7	annual	Asteraceae

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
mayweed, stinking	*Anthemis cotula*	7	annual	Asteraceae
medic, black	*Medicago lupulina*	4 to 7	perennial	Fabaceae
mimosa	*Albizia julibrissin*	7	woody perennial	Fabaceae
mullein (5)	*Verbascum spp.*	7	biennial	Scrophulariaceae
mustard, tansy (preemergence)	*Descurainia spp.*	7	annual/ biennial	Brassicaceae
mustard, black (preemergence)	*Brassica nigra*	7	annual	Brassicaceae
nightshade, silverleaf	*Solanum elaeagnifolium*	4 to 7	perennial	Solanaceae
oxtongue, bristly	*Picris echioides*	5 to 7	biennial	Asteraceae
pea, Swainson	*Sphaerophysa salsula*	5 to 7	perennial	Fabaceae
povertyweed	*Iva axillaris*	5 to 7	perennial	Asteraceae
puncturevine	Tribulus terrestris	7	annual	Zygophyllaceae
ragweed, common	*Ambrosia artemisiifolia*	3 to 5	annual	Asteraceae
ragweed, western	*Ambrosia psilostachya*	4 to 7	perennial	Asteraceae
ragweed, giant	*Ambrosia trifida*	4 to 7	annual	Asteraceae
ragwort, tansy	*Senecio jacobaea*	5 to 7	perennial	Asteraceae
redbud	*Cercis Canadensis*	7	woody perennial	Fabaceae
rush skeletonweed	*Chondrilla juncea*	5 to 7	perennial	Asteraceae
sicklepod	*Cassia obtusifolia*	7	perennial	Fabaceae
smartweed, Pennsylvania	*Polygonum pensylvanicum*	3 to 5	annual	Polygonaceae
sneezeweed, bitter	*Helenium amarum*	4 to 7	annual	Asteraceae
soda apple, tropical (6)	*Solanum viarum*	5 to 7	perennial	Solanaceae
sowthistle, annual	*Sonchus oleraceae*	7	annual	Asteraceae
sowthistle, perennial	*Sonchus arvensis*	3 to 5	perennial	Asteraceae
spanishneedles	*Bidens bipinnata*	4 to 7	annual	Asteraceae
St. Johnswort, common	*Hypericum perforatum*	5 to 7	perennial	Clusiaceae
stiltgrass, Japanese	*Microstegium vimineum*	5 to 7	annual	Poaceae
starthistle, Malta (7)	*Centaurea melitensis*	3 to 5	annual	Asteraceae
starthistle, purple (7)	*Centaurea calcitrapa*	3 to 5	biennial	Asteraceae
starthistle, yellow (7)	*Centaurea solstitialis*	3 to 5	annual	Asteraceae
sunflower, common	*Helianthus annuus*	4 to 7	annual	Asteraceae
sweetclover, white	*Melilotus albus*	5 to 7	biennial	Fabaceae
sweetclover, yellow	*Melilotus officinalis*	5 to 7	biennial	Fabaceae
tarweed, hayfield	*Hemizonia congesta*	7	annual	Asteracea
tarweed, narrow or yellowflower	*Holocarpha virgata*	7	annual	Asteracea
teasel	*Dipsacus spp.*	4 to 7	biennial	Dipsacaceae
thistle, artichoke	*Cynara cardunculus*	5 to 7	perennial	Asteracea
thistle, blessed milk	*Silybum marianum*	4 to 7	biennial	Asteraceae
thistle, bull (8)	*Cirsium vulgare*	3 to 5	biennial	Asteraceae
thistle, Canada (9)	*Cirsium arvense*	5 to 7	perennial	Asteraceae
thistle, woolly distaff	*Carthamus lanatus*	4 to 7	annual	Asteraceae

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
thistle, Italian	*Carduus pycnocephalus*	7	annual	Asteraceae
thistle, musk (8)	*Carduus nutans*	3 to 5	biennial	Asteraceae
thistle, plumeless (8)	*Carduus acanthoides*	3 to 5	biennial	Asteraceae
thistle, Scotch	*Onopordum acanthium*	5 to 7	biennial	Asteracea
thistle, Russian (preemergence)	*Salsola spp*	7	annual	Chenopodiaceae
tree of heaven	*Ailanthus altissima*	7	perennial	Simaroubaceae
trefoil, birdsfoot	*Lotus corniculatus*	5 to 7	perennial	Fabaceae
vetch	*Vicia spp.*	3 to 7	perennial	Fabaceae
willoweed, panicle	*Epilobium brachycarpum*	5 to 7	annual	Onagraceae
wisteria	*Wisteria brachybotris*	7	woody perennial	Fabaceae
wormwood, absinth(10)	*Artemisia absinthium*	6 to 7	perennial	Asteraceae
yarrow, common	*Achillea millefolium*	7	perennial	Asteraceae

(1) **Sulfur cinquefoil or oxeye daisy:** Apply Milestone at 4 to 6 fl oz per acre to plants in the pre-bud stage of development.

(2) **Orange or yellow hawkweeds:** Apply Milestone at 4 to 7 fl oz per acre to plants in the bolting stage of development.

(3) **Diffuse, spotted, and squarrose knapweeds:** Apply Milestone at 5 to 7 fl oz per acre when plants are actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall. Plants will be controlled by mid-summer and fall applications even though plants may not show any changes in form or stature the year of application.

(4) **Russian knapweed:** Apply Milestone at 5 to 7 fl oz per acre to plants in the spring and summer at early bud to flowering stages and to dormant plants in the fall.

(5) M**ullein**: Apply to the rosette stage

(6) **Tropical soda apple:** Apply Milestone at 5 to 7 fl oz per acre at any growth stage, but application by flowering will reduce seed production potential.

(7) **Malta, purple, and yellow starthistle:** Apply Milestone at 3 to 5 fl oz per acre to plants at the rosette through bolting growth stages.

(8) **Bull, musk, and plumeless thistles:** Apply Milestone at 3 to 5 fl oz per acre in the spring and early summer to rosette or bolting plants or in the fall to seedlings and rosettes. Apply at 4 to 5 fl oz when plants are at the late bolt through early flowering growth stages. 2,4-D at 1 lb ae per acre should be tank-mixed with Milestone starting at the late bud stages

(9) **Canada thistle:** Apply Milestone at 5 to 7 fl oz per acre in the spring after all plants have fully emerged (some may be budding) until the oldest plants are in full flower stage. Use the higher rate when applying to the flower stage. Applications are also effective in the fall before a killing frost. Use higher rates for older/dense stands or for longer residual control.

(10) **Absinth wormwood:** Apply 6 to 7 fl oz per acre before wormwood is 12 inches tall. When applying by air on CRP, coverage is important and a minimum of 3 GPA is specified. Remove old duff and litter by fire or mowing for best results

(11) **Invasive knotweeds:** Japanese, Bohemian, giant knotweeds: Optimum suppression of invasive knotweeds with Milestone herbicide is obtained when applications are made to plants that are at least 3 to 4 feet tall. Results of field trials conducted in the western U.S. indicate that high volume applications (100 gpa or greater) of Milestone at 7 fl oz per acre or a spot treatment rate up to 14 fl oz per acre applied in summer will provide good control of invasive knotweeds. In the upper Midwest, mowing in summer followed by fall application of Milestone (prior to frost) provided the best control. Infestations of invasive knotweed that are mowed should be allowed to regrow to at least 3 feet in height prior to herbicide treatment. Monitoring and follow-up herbicide treatments on regrowth will be necessary to control resprouts and achieve long-term control.

(12) **Purple loosestrife:** For optimum control apply Milestone at 7 fl oz per acre plus 1 pint to 1 quart of 2,4-D amine or 1 to 2 quarts of Garlon 3A. Spot treatments may also be made by applying Milestone at 14 fl oz (see Spot treatment section of the label) with or without the addition of 2,4-D or Garlon 3A.

(13) **Fiddleneck:** For optimum control apply Milestone at 4 to 7 fl oz per acre when the plants are young and before flowering. Use higher rates if the plants are older and larger. In California optimal application timing is November through March.

For Control or Suppression of Medusahead Rye and Other Winter Annual Grasses

Milestone applied broadcast at 7 to14 fl oz per acre can suppress or control many winter annual grasses including medusahead rye (*Taeniatherum caput-medusae)* and downy brome *(Bromus tectorum,* also called cheatgrass*)*. The key to optimum results is the timing of application. Applications should be made in late summer prior to rains and seed germination in order to provide the best possibility of suppression or control. In general, annual grass control or suppression will be poor if any of the winter annual grass seeds have germinated prior to application even if they have not yet emerged through the soil surface. Tank mixes with Accord XRT II at 12 fl oz per acre, where a non-selective herbicide can be used or where desired grasses are dormant and will not be harmed, will aid in controlling any winter annual grasses that germinated prior to application. Spot treatment restrictions (see spot treatment section) apply for rates above 7 fl oz per acre for broadcast applications.

Control of Terrestrial Weeds Near and Up to the Water's Edge

Milestone can be used to treat terrestrial weeds that extend up to the water's edge. **Do not apply directly to water.** This product must not be used to treat vegetation standing in the water. When controlling terrestrial weed species near and up to the water's edge, take precautions to minimize incidental overspray to the adjacent water. Consult local public water control authorities before applying this product near public waters. Permits may be required to treat such areas. Apply the specified rate (listed in Table 2) of Milestone as a coarse low-pressure spray as ground broadcast or spot applications. Do not apply aerially for control of weeds growing at or near the water's edge. Spray volume should be sufficient to uniformly cover foliage. Increase the spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. It is also permissible to treat target weeds within dry non-irrigation ditches and seasonally dry transitional areas between upland and lowland sites (such as flood plains, deltas, marshes, prairie potholes, or vernal pools) but only at times when those sites are dry and are forecasted or managed by water control systems to remain dry for at least 2 weeks following application.

Use Rate Restrictions:
Do not broadcast apply more than 7 fl oz per acre of Milestone per year.

The total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per year as a result of broadcast, spot, or repeat applications.

Woody Plant Control

Milestone may be applied to control woody plants by any application method listed on the label on any site listed.

Milestone may be applied alone or in tank-mix combinations with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated, and (2) mixing is not prohibited by the label of the registered tank mixed products. Use as directed in the Directions For Use section of the tank-mix partner. Follow Mixing Instructions.

Add Milestone to tank mixes for improved brush control on species such as alder, aspen, blackberry, boxelder, cherry, coyote brush, conifers, cottonwood, elm, maple, poplar, oak, brooms (Scotch, Spanish, French, Portuguese), gorse, hackberry, Russian and Autumn olive, salt-cedar.

Low or High Volume Foliar Applications:
For broad spectrum brush control using a foliar application, Milestone may be added to tank mixes with the following products or other products labeled for use on the intended site:

Tank Mix Product	EPA Reg. No.	Active Ingredient(s)
Accord XRT II	62719-556	Glycine, N-(phosphonomethyl)-, compd. with N-methylmethanamine (1:1)
Arsenal Powerline Herbicide	241-431	Imazapyr, isopropylamine salt
DMA 4 Herbicide	62719-3	2,4-D, dimethylamine salt
Garlon 4 Ultra	62719-527	Triclopyr, butoxyethyl ester
Remedy Ultra	62719-552	Triclopyr, butoxyethyl ester
Tordon 101 Mixture	62719-5	2,4-D triisopropanolamine salt; Picloram triisopropanolamine salt
Tordon 22K	62719-6	Picloram-potassium
Tordon K	62719-17	Picloram-potassium
Transline	62719-259	Clopyralid, monoethanolamine salt
Garlon XRT	62719-553	Triclopyr, butoxyethyl ester
Garlon 3A	62719-37	Triclopyr, triethylamine salt
Rodeo	62719-324	Glyphosate; Glyphosate-isopropylammonium

Low Volume Basal Bark Applications:
To control susceptible woody plants with stems less than 6 inches in basal diameter, apply herbicide mix (see below for rates) with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground in a manner that thoroughly wets the lower stems but not to the point of runoff. The use of a Spraying Systems Y2 nozzle or similar nozzle is recommended, which will narrow the spray pattern to target individual stems. Herbicide concentration should vary with tree diameter, bark thickness, volume used per acre, and susceptibility of species treated. Apply anytime, including the winter months, except when snow or water prevent spraying to the ground line or when stem surfaces are saturated with water.

Milestone may be used as a low volume basal treatment alone, for sensitive woody species in the Fabaceae family (legumes), or in combination with other products such as Garlon 4 Ultra, Garlon XRT, or Remedy Ultra for broader control of other sensitive woody species. Applications should not exceed the maximum use rate per acre for the site.

Mix Milestone at 0.5 to 5% v/v alone or with Garlon 4 Ultra or Garlon XRT in a commercially available basal diluent (or other oils or basal diluents as recommended by the manufacturer). The basal oil should be compatible with a water soluble herbicides such as Milestone. See Table 3 to calculate the amount of Milestone that can be applied per acre at the various volumes and rates. Make a stable tank mixture for basal bark application by first combining each product with a compatibility agent prior to final mixing in the desired ratio. If using a tank mix, mix the oil-based products such as Garlon 4 Ultra thoroughly with basal oil and add any other oil-based products before adding the water-based products. If the mixture stands for more than 30 minutes, reagitation may be required.

Oil and water based mixtures can separate over time. Long-term storage is not recommended without vigorous agitation prior to use or without a recommended compatibility agent.

Use caution when treating areas adjacent to susceptible and desirable species to avoid root uptake and possible injury when using Milestone or other soil active herbicides

Low Volume Stem Bark Band Treatment
To control susceptible woody plants (see Table 2) with stems less than 6 inches in basal diameter, mix 0.5 to 5 gallons of Milestone in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Apply the spray in a 6-inch to 10-inch wide

band that completely encircles the stem. Spray in a manner that completely wets the bark, but not to the point of runoff. The treatment band may be positioned at any height up to the first major branch. For best results apply the band as low as possible. Spray mixture concentration should vary with size and susceptibility of species to be treated. Applications may be made anytime, including winter months.

Table 3:

% of Milestone in Basal Mix	Fluid ounces of Milestone by GPA (gallons per acre)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.0	1.3	2.6	3.8	5.1	6.4	7.7	9.0
1.5	1.9	3.8	5.8	7.7	9.6	11.5	13.4
2.0	2.6	5.1	7.7	10.2	12.8		
2.5	3.2	6.4	9.6	12.8			
3.0	3.8	7.7	11.5				
3.5	4.5	9.0	13.4				
4.0	5.1	10.2					
5.0	6.4	12.8					

within spot treatment labeled rate
in excess of spot treatment labeled rate

NOTE: Avoid treating high density of stems adjacent to desirable trees with roots in the treatment zone. See Table 4 for guidance on estimated volume per acre by treated stem density. Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Applications of Milestone within the root zone of desirable trees should not be made unless injury can be tolerated. Severe injury or plant death can occur if used near roses or leguminous trees such as locusts, redbud, mimosa, and caragana.

Table 4:

Estimated gallons of spray solution per acre for basal bark applications on various stem densities per acre		
	Volume Range	Target Spacing
Number of Stems per Acre	(gallons per acre)	(feet between brush/trees)
250	1.0 to 1.7	8.4
500	2.0 to 3.3	5.9
750	3.0 to 5.0	4.9
1000	4.0 to 6.6	4.2
1250	5.0 to 8.3	3.8
1500	5.9 to 9.9	3.4

Chemical Side Trimming

Milestone may be tank mixed with Garlon 3A, Rodeo, Garlon 4 Ultra, Accord XRT II, or other labeled herbicides for effective chemical limb trimming applications. These applications are designed to control only the portion of the plant which is treated, and calibrated equipment is essential. Mix Milestone at 0.1 to 0.5% v/v plus the recommended rate of the tank mix partner(s) plus surfactant, or mix Milestone at 7 fl oz per acre with the other tank mix partner(s) at the recommended rates. Use lower rates of Milestone where higher gallons per acre of spray solution are used but not to exceed the 7 fl oz per acre maximum labeled rate. Direct the spray solution to cover only the portion of the plant to be controlled. Avoid spraying the crown of the tree to allow for side trimming and not complete control of the tree. For conifers in particular, to avoid more injury than intended, it is advisable to apply on less than 1/3 of the tree canopy. Avoid treating under or around desirable tree species such as legumes like locust and mimosa, Douglas-fir, conifers, or other sensitive trees unless injury or death of the tree can be tolerated. See Dow AgroSciences literature for guidelines on treating around trees.

Cut Stubble Applications

To prevent re-sprouting of susceptible woody species or germination of susceptible broadleaf plants after mowing or hand cutting on any site listed on label, use Milestone at 7 fl oz per acre in a tank mix with Tordon K or Tordon 22K at 1 to 2 quarts per acre, Garlon 4 Ultra at 4 to 6 quarts per acre, Garlon 3A at 6 to 8 quarts per acre, 16 fl oz per acre of a 2 lb ai per gallon imazapyr product or equivalent, or with other herbicides labeled for the site. Best results may be obtained with good coverage of the remaining cut stems and when applications are made before or during periods of active root growth. Recommended spray volume is 10 to 50 gallons per acre. Applications should not be made when the soil is frozen or covered by snow or standing water. It is recommended that applications be made soon after cutting, before sprouting of woody species has occurred.

Cut surface

Apply Milestone in the cut surface applications listed below for control of susceptible tree species such as legumes like albizia, mimosa, locust, etc. Mixtures of Milestone and Garlon 3A or Garlon 4 Ultra may be effective on species other than legumes such as elm, maple, oak and conifers.

Cut surface applications may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples in the spring.

Cut-Stump Treatment

Apply Milestone as a 10% dilution v/v in water, by spraying or painting all the exposed cambium layer on the freshly cut surface. The cambium area next to the bark is the most vital area to wet.

With Tree Injector Method

Apply by injecting 1 milliliter of 10% v/v Milestone in water through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.

With Hack and Squirt Method

Make cuts around the tree trunk at a convenient height with a hatchet or similar equipment so that the cuts overlap slightly and make a continuous circle around the trunk. Spray 1 milliliter of 10% v/v Milestone in water into the pocket created between the bark and the inner stem/trunk by each cut.

With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. The frill should allow for the herbicide to remain next to the inner stem and absorb into the plant. Wet the cut surface with 10% v/v Milestone in water.

For use in Hawaii only:
Incision Point Application (IPA) also known as Tree Injection or Hack and Squirt

For control of susceptible tree species such as albizia and other legumes and susceptible tree species, make cuts around the tree trunk at a convenient height with a machete, hatchet, or similar equipment so that the cuts are about 6 inches apart between centers. Inject 0.5 to 1 milliliter of undiluted Milestone into the pocket created between the bark and the inner stem/trunk by each cut as soon as possible after cutting. The cambium area next to the bark is the most vital area to wet.

Preemergent Weed Control

Typically Milestone is used as a post emergent herbicide but it has preemergent activity on susceptible weeds. Use Milestone as a preemergence spray prior to weed seed germination. Control will depend upon species susceptibility, application timing, and environmental conditions such as precipitation following application. When applied at rates lower than 7 fl oz per acre, Milestone can provide short-term control of some susceptible weeds, but when applied at 7 fl oz (broadcast) or 14 fl oz (spot treatment), weed control is extended.

Best results for use as a preemergent application for total vegetation control are obtained if Milestone at 7 fl oz per acre is tank mixed with other herbicides to broaden the weed spectrum and to control grasses. If grasses and broadleaf weeds tolerant to Milestone are present at the time of application or will germinate on the site, then tank mixtures with other herbicides such as the products listed below, or flumioxazin, diuron, or other herbicides labeled for total vegetation control applications.

Tank Mix Product	EPA Reg. No.	Active Ingredient(s)
Accord XRT II	62719-556	Glycine, N-(phosphonomethyl)-, compd. with N-methylmethanamine (1:1)
Rodeo	62719-324	Glyphosate; Glyphosate-isopropylammonium
Dimension 2EW	62719-542	Dithiopyr
Dimension EC	62719-426	Dithiopyr
Oust X Herbicide	432-1552	Sulfometuron
Esplanade 200 SC	432-1516	Indaziflam
Esplanade City	432-1528	Diquat dibromide; Glyphosate-isopropylammonium; Indaziflam
Esplanade F	432-1517	Indaziflam
Esplanade Sure	432-1604	Indaziflam; Rimsulfuron

SPOT TREATMENTS FOR AREAS SUCH AS SUBJECT POLES, SUBSTATIONS, AND OTHER SMALL AREAS

Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per year to small spots for clearing around utility subject poles to help prevent fire damage, on small substations, and other spot areas. To prevent misapplication, spot treatments should be applied with a calibrated sprayer**.**

Wheat, Including Durum
(Not Underseeded with a Legume)

Milestone controls annual and perennial broadleaf weeds in wheat (including durum) not underseeded with a legume.

Application Timing and Weeds Controlled

Timing to Crop: Apply as a broadcast treatment to actively growing wheat from the 3-leaf crop growth stage up to early jointing stage (Zadoks scale 30). **Do not use if cereal crop is underseeded with a legume.**

Timing to Weeds: Apply when weeds are actively growing and at specified growth stages. For best results on perennial weeds such as Canada thistle, apply when the majority of the basal leaves have emerged from the soil up to bud stage. Only weeds emerged at the time of application will be controlled. Unfavorable growing conditions such as drought or temperatures near freezing prior to, at, or following time of application may reduce weed control and increase the risk of crop injury at all stages of growth.

Spot Application: To prevent over-application, spot treatments must be applied at rates and spray volumes equivalent to broadcast application. For spot application, apply the specified rate in a spray volume of 0.5 gallons or more per 1000 sq feet.

Table 5: Weeds Controlled or Suppressed

Note: Numbers in parentheses (-) refer to footnotes below.

Weeds Controlled	Weeds Suppressed †	Application Rate
buckwheat, wild (2) chamomile dock, curly	bindweed, field knotweed ladysthumb (1)	**broadcast:** 0.57 fl oz per acre

Weeds Controlled	Weeds Suppressed †	Application Rate
grape species horseweed (marestail) lentils, volunteer lettuce, prickly mayweed (dogfennel) peas, volunteer sowthistle, annual sunflower (1) wormwood, biennial	lambsquarters mustard species pennycress, field pigweed species smartweed, green (1) sowthistle, perennial (3) thistle, Canada (3) thistle, Russian	**spot treatment:** 0.4 ml per 1000 sq feet

† **Suppression** is considered to be a reduction in weed competition (reduced weed population or vigor) in treated compared to untreated areas. Tank mixing with a labeled herbicide may be required to achieve consistent control of these weeds.

1. For best results, apply up to the 2 to 4 leaf stage of growth.
2. For best control, apply in the 1 to 3 leaf stage of growth, before vining.
3. For best results, apply from rosette to bud (pre-flower) stage of growth.

Perennial Weeds: Milestone will control top growth and inhibit regrowth of perennial weeds during the season of application (season-long control). Milestone may cause a reduction in perennial weed shoot growth in the season following application, but effects may be inconsistent due to variability in size and vigor of perennial root systems and growing conditions.

Restrictions:
- Do not apply more than 0.57 fl oz per acre of Milestone per growing season.
- **Preharvest Interval:** Do not apply within 50 days of harvesting of grain and straw. There is no restriction following application of Milestone on harvest of wheat for hay.

Tank Mixtures (Wheat, Including Durum)

To broaden the spectrum of weed control or to improve control of certain weeds, Milestone may be tank mixed with labeled rates of other herbicides registered for postemergence application in wheat (Table 6). See tank mixing precautions under Mixing Instructions. When tank mixing, do not exceed specified application rates and use only in accordance with the restrictions, precautions, and limitations on the respective product labels.

Table 6: Tank Mixtures for Wheat, Including Durum
The following products may be tank mixed with Milestone for improved control of listed weeds:

Tank Mix Product	EPA Reg. No.	Active Ingredient(s)	Broadcast Rate	Additional Weeds Controlled
Starane® Ultra	62719-577	Fluroxypyr-meptyl	0.3 pint per acre	kochia, bedstraw (cleavers), chickweed, volunteer flax
Harmony SG herbicide	279-9595	Thifensulfuron	5/10 oz per acre	lambsquarters, mustard, pigweed, Russian thistle
Express herbicide	279-9594	Tribenuron-methyl	3/16 to 1/2 oz per acre	mustard, Canada thistle, Russian thistle
Ally XP herbicide	279-9575	Metsulfuron	1/10 oz per acre	lambsquarters, mustard, pigweed, Russian thistle

Products containing the following active ingredients may be tank mixed with Milestone for improved control of listed weeds:

- 2,4-D ester or amine (3.8 lb/gal a.e.) at 1/2 to 3/4 pint per acre to control lambsquarters, mustard, pigweed, Canada thistle, Russian thistle.
- MCPA ester or amine (3.8 lb/gal a.e.) at 1/2 to 3/4 pint per acre to control lambsquarters, mustard.

Use Restrictions (Wheat, Including Durum)

- **Avoiding Injury to Nontarget Plants:** Do not apply Milestone directly to, or allow spray drift to come in contact with, any broadleaf crop or other desirable broadleaf plants including, but not limited to, cotton, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops will be planted the same season. Avoid application under conditions that may allow spray drift since very small quantities of spray, which may not be visible, may seriously injure susceptible crops during either active growth periods or dormancy. Follow Spray Drift Management and Aerial Drift Reduction Advisory to minimize the potential for spray drift.
- Do not contaminate irrigation ditches or water used for domestic purposes.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not transfer livestock** from treated grazing areas (or livestock fed treated hay) to sensitive broadleaf crop areas without first allowing 3 days of grazing on an untreated pasture (or feeding of untreated hay). If livestock are transferred within less than 3 days of grazing untreated pasture or eating untreated hay, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants.

Crop Rotation Intervals
Residues of this product in treated plants, including the treated crop or weeds, which have not completely decayed may affect succeeding susceptible crops.

Table 7: Crop Rotation Intervals
Note: Numbers in parenthesis (-) refer to footnotes following tables.

Rotation Crops	Rotation Interval (1) in Months
wheat (including durum)	0
barley, grasses, field corn, grain sorghum, millet, oats, rye, triticale, sweet corn	4
safflower, canola (rapeseed), flax, mustard, popcorn	9
alfalfa, dry bean, soybean, safflower, sunflower, sugarbeet, potato	18
chickpea, field pea, lentil	24
crops not listed	24 (2)

(1) The above listed crop rotational intervals are based on average annual precipitation, regardless of irrigation practices. Observance of specified crop rotation intervals should result in adequate safety to rotational crops. However, Milestone is dissipated in the soil by microbial activity and the rate of microbial activity is dependent upon several interrelated factors including soil moisture, temperature, and organic matter. Therefore, accurate prediction of rotational crop safety is not possible. In areas of low organic matter (<2.0%) and less than 15 inches average annual precipitation, potential for crop injury may be reduced by burning or removal of crop residues, supplemental fall irrigation, and deep moldboard plowing prior to planting the sensitive crop.

(2) Perform a field bioassay prior to planting any broadleaf crops that are not listed. Do not rotate to unlisted crops prior to 24 months following application without a field bioassay.

Field Bioassay Instructions: In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, or drainage. The field bioassay can be initiated one year after the last application of aminopyralid in that field. Observe the test crop for herbicidal activity, such as poor stand (effect on seed germination), chlorosis (yellowing), and necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the test rotational

crop; plant only a labeled crop or crop listed in table 6 above for which the rotational interval has clearly been met.

For Postemergence Broadleaf Weed Control in Field Corn and Field Corn Grown For Ensilage

Maximum Application Rate: Do not exceed a total application rate of 1.7 fluid oz per acre of Milestone in a single crop year. Do not apply greater than 0.57 oz Milestone per acre (0.0089 lb ae per acre) in a single application, or corn injury and reduction of yield may result.

- Do not apply by air.
- Do not apply more than 3 applications per year.
- An interval of at least 3 days is required between each application.

Application Precautions

- Uneven application of Milestone can result in erratic weed control or crop injury. Over application may result in crop injury or rotational crop damage from soil residue.
- **Preharvest Interval:** An interval of at least 0 days is required between application of Milestone and field corn harvested for grain. If field corn is grown for forage or ensilage, application must occur before corn reaches 20 inches in height or V6 growth stage (whichever occurs first) and an interval of at least 8 days is required between application and harvest.

Application Timing and Weeds Controlled

Timing to Crop: Apply as a broadcast treatment to actively growing corn before it reaches 20 inches in height or V6 growth stage (whichever occurs first).

Timing to Weeds: Apply when weeds are actively growing and at specified growth stages. For best results on perennial weeds, apply when the majority of the basal leaves have emerged from the soil up to bud stage. Unfavorable growing conditions such as drought or temperatures near freezing prior to, at, or following time of application may reduce weed control and increase the risk of crop injury at all stages of growth.

Spot Application: To prevent over-application, spot treatments should be applied at rates and spray volumes equivalent to broadcast application. For spot application, apply the specified rate in a spray volume of 0.5 gallons or more per 1000 sq ft.

Note: Numbers within parentheses (-) refer to footnotes below.

Weeds Controlled	Weeds Suppressed †	Application Rate
buckwheat, wild (2) cocklebur lentils, volunteer lettuce, prickly peas, volunteer sowthistle, annual sunflower (1) wormwood, biennial	dock, curly knotweed ladysthumb (1) lambsquarters smartweed, green (1) sowthistle, perennial (3) thistle, Canada (3)	**broadcast:** 0.57 to 1.7 fl oz per acre **spot treatment:** 0.4 to 1.2 ml per 1000 sq feet

† **Suppression** is considered to be a reduction in weed competition (reduced weed population or vigor) in treated compared to untreated areas. Tank mixing with a labeled herbicide may be required to achieve consistent control of these weeds.

(1) For best results, apply up to the 2 to 4 leaf stage of growth.
(2) For best control, apply in the 1 to 3 leaf stage of growth, before vining.
(3) For best results, apply from rosette to bud (pre-flower) stage of growth.

Tank Mixing
Milestone may be tank mixed or followed by other overlay or postemergence treatments registered for use on corn to broaden the spectrum of weeds controlled. This product may be applied in tank mix combination with labeled rates of other products provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated; (2) tank mixing is not prohibited by the label of the tank mix product; and (3) the tank mix combination is compatible as determined by a jar test described in the Tank Mix Compatibility Testing section below.

Tank Mixing Precautions:
- Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels.
- Do not exceed specified application rates. Do not tank mix with another pesticide product that contains the same active ingredient as this product unless the label of either tank mix partner specifies the maximum dosages that may be used.
- For products packaged in water soluble packaging, do not tank mix with products containing boron or mix in equipment previously used to apply a product mixture containing boron unless the tank and spray equipment has been adequately cleaned. (See instructions for Sprayer Clean-Out.)

Tank Mix Compatibility Testing: A jar test is specified prior to tank mixing to ensure compatibility of Milestone and other pesticides. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately 30 minutes. If the mixture balls-up or forms flakes, sludges, gels, oily films or layers, or other precipitates, it is not compatible and the tank-mix combination should not be used.

Precautions
- **Hybrid Seed Production:** Corn inbred lines grown for hybrid seed production may be injured by Milestone. Inbred lines should be thoroughly tested for crop tolerance before treating large acreage. While growers are not prohibited from using Milestone on seed corn, **Dow AgroSciences will not accept responsibility for any crop injury arising from the use of Milestone on field corn grown for seed.**

Restrictions:
- Do not apply Milestone to sweet corn or popcorn.
- **Avoiding Injury to Non-Target Plants:** Do not apply Milestone directly to, or allow spray drift to come in contact with, any broadleaf crop or other desirable broadleaf plants including, but not limited to, cotton, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops will be planted the same season. Avoid application under conditions that may allow spray drift since very small quantities of spray, which may not be visible, may seriously injure susceptible crops during either active growth periods or dormancy. Follow Spray Drift Management section on the label affixed to the container for Milestone and the Advisories to minimize drift to non-target sites on this supplemental label.
- Do not contaminate irrigation ditches or water used for domestic purposes.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not transfer livestock** from treated grazing areas (or livestock fed treated hay) to sensitive broadleaf crop areas without first allowing 3 days of grazing on an untreated pasture (or feeding of untreated hay). If livestock are transferred within less than 3 days of grazing untreated pasture or eating untreated hay, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants.

Crop Rotation Intervals
Residues of this product in treated plants, including the treated crop or weeds, which have not completely decayed may affect succeeding susceptible crops.

Note: Numbers within parentheses (-) refer to footnotes following table.

Rotation Crops	Rotation Interval (1) in Months
wheat (including durum)	0

Rotation Crops	Rotation Interval (1) in Months
barley, grasses, field corn, grain sorghum, millet, oats, rye, triticale, sweet corn	4
safflower, canola (rapeseed), flax, mustard, popcorn	9
alfalfa, dry bean, soybean, safflower, sunflower, sugarbeet, potato	18
chickpea, field pea, lentil	24
crops not listed	24 (2)

(1) The above listed crop rotational intervals are based on average annual precipitation, regardless of irrigation practices. Observance of specified crop rotation intervals should result in adequate safety to rotational crops. However, Milestone is dissipated in the soil by microbial activity and the rate of microbial activity is dependent upon several interrelated factors including soil moisture, temperature, and organic matter. Therefore, accurate prediction of rotational crop safety is not possible. In areas of low organic matter (<2.0%) and less than 15 inches average annual precipitation, potential for crop injury may be reduced by burning or removal of crop residues, supplemental fall irrigation, and deep moldboard plowing prior to planting the sensitive crop.

(2) A field bioassay is specified prior to planting any broadleaf crops that are not listed. Do not rotate to unlisted crops prior to 24 months following application without a field bioassay.

- **Do not apply when weather conditions favor drift to non-target sites.** Spray drift of Milestone to emerged soybeans or soil to which soybeans will be planted during the same growing season may cause soybean injury.
- **Read and follow these Advisories to minimize drift to non-target areas.**
  - Minimize drift by using sufficient spray volume to ensure adequate coverage with large-droplet size sprays.
  - Use low pressure application equipment capable of producing a large-droplet spray. Do not use nozzles that produce a fine-droplet spray. Droplet size has been shown to be the single most important factor affecting drift from ground applications.
  - While increasing droplet size does reduce the potential for spray drift, larger droplets do not eliminate drift if environmental or application conditions are inappropriate for application.
  - Use larger capacity nozzles to increase flow rate rather than increasing spray pressure.
  - Keep height of ground-driven spray booms as low as possible above the target to minimize exposure to evaporation and wind while still providing good coverage. Applications made late in the growing season with excessive boom heights drastically increase the potential for spray drift.
  - Do not apply when wind is gusting or wind speed exceeds 15 mph as uneven spray coverage and drift may result. Avoid application to border rows adjacent to susceptible crops such as soybeans, field peas, or sunflowers under windy conditions unless one of the following drift management steps is taken:
    (1) application is made only when the wind direction is such that the susceptible crop is up-wind from the treatment area (wind blowing from the susceptible crop toward the treated crop); or
    (2) the applicator leaves an adequate buffer zone between the treated crop and the susceptible crop, and coarse or low drift nozzle configurations are used.
  - A drift control or deposition agent may be used with this product to aid in reducing spray drift due to wind when making applications adjacent to susceptible crops, but may not be effective after prolonged pumping of the spray mix.
  - On calm days with little or no wind, check for temperature inversions before making herbicide applications. Temperature inversions occur under calm conditions with little or no wind and air temperature increases with increasing height above the ground. Inversion conditions may be indicated by a layer of fog or mist near the ground and, under clear conditions, may be detected by use of a smoke column. A temperature inversion is indicated when smoke does not rise in a column,

but layers at some level above the ground. Do not apply herbicides if temperature inversion conditions exist in the treatment area.

Sprayer Cleanup

To avoid injury to, or exposure of, non-target crops, thoroughly clean and drain spray equipment used to apply Milestone after use. Cleaning should occur as soon as possible after application of Milestone. Spray equipment should be cleaned after use with Milestone by the following procedure:

1. Drain any remaining Milestone from the spray tank and dispose of according to label disposal instructions.
2. Hose down the interior surfaces of the tank. Flush tank, hoses, boom, and nozzles with clean water for 10 minutes. Fill the tank with water and recirculate for 15 minutes. Spray part of the mixture through the hoses, boom, and nozzles and drain the tank. All rinse water must be disposed of in compliance with local, state, and federal guidelines.
3. Fill the tank with water and recirculate for 15 minutes. For optimum cleaning, a tank cleaner such as liquid ammonia (1 gallon per 100 gallons of water) or other commercial tank cleaner is required in the second rinse if the spray equipment will be used on crops other than field corn. Spray part of the mixture through the hoses, boom, and nozzles and drain the tank. All rinse water must be disposed of in compliance with local, state, and federal guidelines.
4. Remove the nozzles and screens and clean separately.
5. If the spray equipment will be used on crops other than field corn, repeat steps 1 and 2 again and thoroughly wash the spray mixture from the outside of spray tank and the boom.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent permitted by law, otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. To the extent permitted by law, Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

To the extent permitted by law, Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in

writing. To the extent permitted by law, in no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

EPA accepted 06/02/2020

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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control
From: Pamela J. Bryer, Ph.D. | Toxicologist
Subject: Milestone Special Local Need 24c Registration 2022 Review

December 2, 2022

Summary:

Aminopyralid is a low-toxicity herbicide that is unlikely to cause undue risk to people or the environment from the proposed uses in this Special Local Need, 24c, registration.

Rationale:

Aminopyralid is a reduced-risk herbicide used for controlling weedy dicots. EPA designated aminopyralid as reduced risk when it was registered in 2005 because the human health and environmental risks posed by its use are less than many other commonly used herbicides.

Aminopyralid's residence time in the environment covers an expansive range. The compound breaks down rapidly so rapidly that its half-life can be measured in hours, but only when it is in sunlight and sunlit water. In dark soil and sediment, aminopyralid can take hundreds of days to over a year to break down. This long half-life is part of the reason aminopyralid can offer residual control.

Aminopyralid is fairly soluble in water (an attribute that makes chemicals likely to leach), however, its ability to leach is variable and dependent on soil characteristics. In soil movement studies, aminopyralid largely stayed in the top portion of the soil. The maximum leaching recorded in field trials was 15 to 90 cm deep.

The primary toxic effects of aminopyralid are to terrestrial dicots, as can be expected with an herbicide. Even in simulated worst-case spill events, a tank release into a small pond, EPA found aminopyralid did not pose unacceptable risk to algae, some plants, fish, or aquatic invertebrates.

Aminopyralid is practically non-toxic to mammals and birds. Even after accounting for ingestion of grasses and seeds sprayed in the target application zone, EPA determined there would be no

harm to birds and small mammals. In feeding and contact studies, aminopyralid was considered to be practically non-toxic to bees. Aminopyralid is classified by US EPA as Not Likely To Be Carcinogenic To Humans.

The primary focus of managing aminopyralid's non-target effect is mitigating damage to terrestrial plants due to composted materials. Aminopyralid is one of the four persistent herbicides that have been linked to many cases of damage to gardens and other plantings.

EPA issued an Interim Decision for registration renewal in 2021 (available at: https://www.regulations.gov/document/EPA-HQ-OPP-2013-0749-0145). Changes in the decision include enhanced measures for restricting the movement of hay, grazing animals, and manure from composting streams.

Aminopyralid is commonly used in southern and western states for pasture as can be seen in Figure 1.

There are tolerances set for aminopyralid based on its use on wheat and pasture. These details can be found at: https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=b069684783771469b656e65a48e2a7df&ty=HTML&h=L&mc=true&r=SECTION&n=se40.26.180_1610

Source documents:

Aminopyralid Fact Sheet. Issued August 10, 2005. US EPA Office of Prevention, Pesticides. Available at: https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-005100_10-Aug-05.pdf

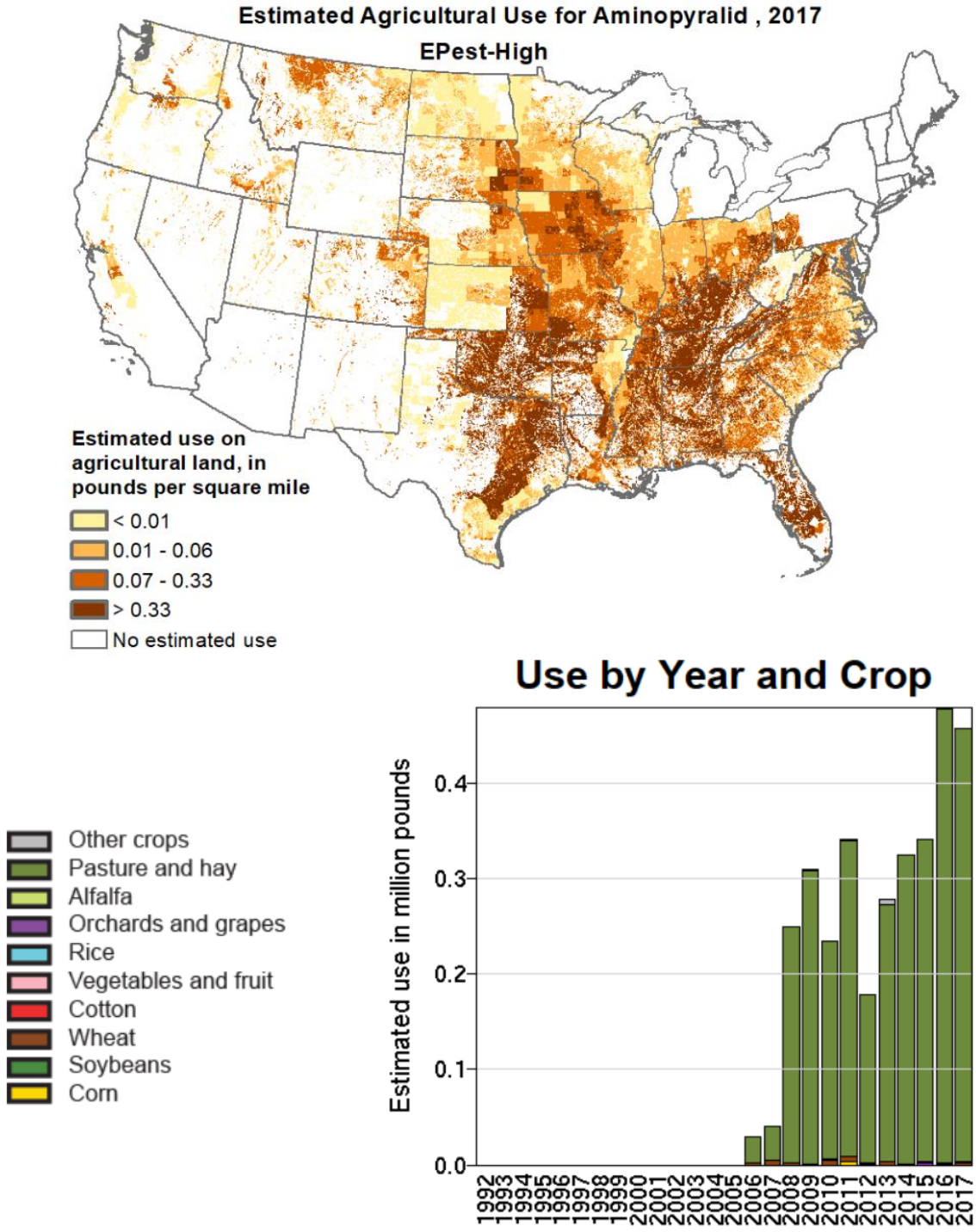
Preliminary Problem Formulation for the Environmental Fate and Ecological Risk, Endangered Species, and Human Health Drinking Water Exposure for Aminopyralid, Potassium salt of Aminopyralid, and Triisopropanolamine Salt of Aminopyralid. Issued February 12, 2014. US EPA Office of Pesticide Programs, Environmental Fate and Effects Division. Available at: https://www.regulations.gov/document?D=EPA-HQ-OPP-2013-0749-0011

Addendum to the Problem Formulation for the Environmental Fate and Ecological Risk, Endangered Species, and Drinking Water Assessments in Support of the Registration Review of Aminopyralid Regarding Tier I Honey Bee Toxicity Testing. Issued September 3, 2014. US EPA Office of Chemical Safety and Pollution Prevention. Available at: https://www.regulations.gov/document?D=EPA-HQ-OPP-2013-0749-0044

Aminopyralid Human Health and Ecological Risk Assessment -Final Report. Prepared for USDA/Forest Service and National Park Service. Issued June 28, 2007. Prepared by Syracuse Environmental Research Associates Inc., Fayetteville, New York. SERA TR-052-04-04a. Available at: https://www.fs.usda.gov/nfs/11558/www/nepa/101135_FSPLT3_2537846.pdf

Aminopyralid Estimated Agricultural Use. National Water-Quality Assessment (NAWQA) Project. USGS Website. Accessed July 7, 2020. Available at: https://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2017&map=AMINOPYRALID&hilo=L&disp=Aminopyralid

Figure 1. Data organized by USGS for estimating agricultural uses of aminopyralid in the US.



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JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: Pamela J. Bryer, Ph.D. | Pesticides Toxicologist | Maine Board of Pesticides Control

Subject: School Herbicide Use Project Update

Date: December 2, 2022

In 2021, the Maine Legislature passed LD 519 An Act To Protect Children from Exposure to Toxic Chemicals. Section two of the bill was direction to the Board of Pesticides Control to convene its Medical Advisory Committee (MAC) to "further evaluate the potential impact of herbicides used on school grounds on human health". The Board directed the MAC to take up the legislative request and the MAC convened three meetings. In 2021, staff prepared a draft report on school herbicide use which included the MAC recommendations to the Board (link to report: https://www.maine.gov/dacf/php/pesticides/documents2/bd_mtgs/Jan22/Draft%20MAC%20Report%201-11-2022%20-%20fixed%20.pdf). The Board reviewed this report and directed staff to conduct the recommended research. This memo is an update to the MAC's recommendation for a risk assessment of the active ingredients available for use on school grounds.

Current Use Patterns

One of the first items discussed by the MAC was the issue of how much herbicide is currently being used on school grounds here in Maine. Risk from pesticide use is a construct of both the potential hazard of the pesticide and exposure to that pesticide. Understanding the patterns of use in Maine on school grounds is fundamental to understanding how to assess actual risk and understand what improvements can be made. In late summer 2021, BPC reached out to pesticide applicators likely to perform school herbicide applications and called in records from the 2020 and 2021 years.

The application records data patterns were presented in the report submitted to the legislature in 2022 (see link above). The records call-in produced application logs of variable quality. The reported data required significant cleanup and retained many data gaps. In early 2022, staff reached out again with a follow-up records call-in to applicators in order to compile a better and more complete version of the dataset covering 2020 and 2021 (the initial call-in truncated the 2021 application year). Currently, the improved dataset has been entered into a spreadsheet and basic patterns have been compiled. Additional time needs to be spent teasing apart chemical-specific patterns. It is of note that this second request still did not create a perfect data set. The recall improved the records call-in but it still produced files with missing data and incorrectly entered details.

MEGAN PATTERSON, DIRECTOR
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Number of blank entries from the 2020 & 2021 school herbicide use records data sets	
Date of Application	0
Timing	155
Location (Address)	0
Size of Treated Area (sq ft)	43
Site or Crop	44
Target Pest	44
Brand Name	3
Active Ingredient	45
EPA Registration Number	51
Rate	281
Undiluted Volume	357
Mix Volume	125
Mix Ratio	145
Total Amount Applied	78
Application Method	127

Exposure Assessment

Risk assessments hinge on understanding potential exposure. Given that we cannot realistically always measure exposure we are often left to estimate it. Each chemical's final risk management decision should integrate exposure with hazard to develop guidelines around future lawful use. The applicator records call-in was one approach to understanding realistic exposures, however, they alone cannot explain total potential exposure. When confronted with uncertainty about the true exposure, it is standard in risk assessment to be as conservative as possible in exposure estimates. Pesticide application instructions taken from the label most often list a range of rates. Applicator records can describe what is being applied but not the potential of what could be applied if applications are not being made at the maximum application rate. In mathematical representations of exposure, the maximum use rate and the maximum number of uses are assumed to occur.

Staff started with the mathematical models established by EPA for assessing exposure. The models were used to specifically reflect exposures for children on school grounds. This work deviates from the EPA's use of the models since they do not frequently focus on only one portion of a child's life. In some instances, this use makes this exposure assessment more conservative in others less so. For example, children are often said to have a higher surface area to weight ratio. While this is true, they also have less total surface area and less total lung volume. Smaller sizes equal smaller total exposures. This exposure assessment complements the work already done by EPA by expanding the total exposure scenario to look more closely at this one specific exposure pathway.

The exposure assessment is currently underway and is taking more time due to the high volume of chemicals for review (44). Data mining from EPA and other risk assessment documents to populate the exposure models takes time, especially if abnormalities are found. Missing data pieces needed for the models are the most common challenge. Typically, missing data is more common in biological and reduced-risk pesticides. When no data are available it is standard to use the most extreme value in its place. For each active ingredient, a summary of the exposure assessment is summarized into an information-at-a-glance card format an example of which is available at the end of this memo.

Literature Review

The committee was also interested in a better understanding of up-to-date hazard information for each of the herbicides and expressed interest in a literature review. Pesticide registrations undergo a full review process every 15 years with EPA. Significant new information can appear anytime between registrations. Most of the information used in risk assessment development comes from manufacturers and is meant to fit the data requirements of EPA, however, the scientific literature can also be an important source of information. Up-to-date information from both sources is required in order to make decisions on the best available science.

Staff has attempted to hire a contractor to perform this significant task. We have identified 44 herbicide active ingredients allowed for use on school grounds for this review. This task represents a significant amount of specialized work. Contracting issues have prevented the successful completion of this work on the previously intended schedule.

Staff are now seeking the Board's guidance on how to proceed with this work.

Example of the gathered exposure data and exposure modeling results:

Mecoprop-p, MCPP-p

Basic chemical profile

Soil half-life (lab)	Soil half-life (field)	On plant half-life	On/In plant half-life
days	days	days	days
5.24	21	NA	NA
Non persistant	Non persistant		

Bioconcentration factor	Solubility	Oil-water partioning factor
unitless	mg/L	*as LogP*
3	250,000	-0.19
Low	Low	Low

Vapor Pressure	Henry's Law Constant
units here	units here
0.23	0.000057
Low	Non-volatile

Hazard profile

	Incidental Oral	Acute Dietary	Dermal
	mg/kg/day	mg/kg/day	mg/kg/day
POD	35	175	1,000
LOC	100	100	100
MOE *unitless*	450	11	240

Cancer rating

"Suggestive Evidence of Carcinogenicity, but Not Sufficient to Assess Human Carcinogenic Potential"

POD= Point of Departure, the highest concentration known with no effect based on animal test data
LOC= Level of Concern, a multiplier used to buffer unknown variation. The LOC times the POD is the level exposure is not allowed to exceed.
MOE= Margin of Exposure, the estimated environmental concentration divided by (POD x LOC). If the environmental concentration exceeds the estimated concentration to cause harm the cell highlights in red and predicts exposures of concern.

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JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: Pamela J. Bryer, Ph.D. | Pesticides Toxicologist | Maine Board of Pesticides Control

Subject: Forestry Aerial Herbicide Project Update

Date: December 2, 2022

This update memo is meant to advise the board members on progress to date and provide an opportunity for input and advice. Executive Order 41 directed the BPC to conduct an extensive water quality monitoring project in the summer/fall of 2022. The projected cost of the project hovers around $100,000. Funds were not allocated to cover the cost of the proposed project. BPC staff used summer 2022 to prepare for and ground-truth the project plan while sources of funding were sought out. BPC hired a temporary employee for 20 hr/wk to work on these tasks.

Summer 2022 Activities-

Glyphosate monitoring capabilities- The Caas Cube is a piece of analytical equipment that allows for rapid low-cost screening of water samples for glyphosate. This summer staff worked through use of the equipment and established a standard operating procedure (SOP). The SOP is needed to be included in the Quality Assurance Project Plan (QAPP) to be created for this study. Monies received from EPA for water quality studies require the establishment and documentation of a thoughtful research approach which the QAPP document satisfies.

Field visits- Staff visited several areas to be sprayed in 2022 for site prep and conifer release activities to better assess the feasibility of the previously proposed plan. These activities highlighted the lack of appropriate sampling areas as described in the previously proposed plan. State pesticide law prohibits broadcast spraying within 25 feet of waterbodies while harvest laws restrict timber harvest within 75 to 250 feet from waterbodies. While the distance to water is variable and based on various factors, clear-cutting is not allowed as close to waterbodies as spraying is allowed. Standard industry practices as well as Maine laws governing timber harvesting (Chapters 21 and 27 https://www.maine.gov/dacf/mfs/rules_and_regulations.html) mean that the previous water quality study plan (which was built around exploring if the current distances cited in pesticide regulations are sufficiently protective) is not relevant to how forestry is conducted today. A review of sites on

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GIS layers marked with streams shows that most areas to be sprayed are much farther from streams. Distances of 2,000’ to 2,500’ were commonly found.

BPC staff have extended the contract with our temporary employee to better describe the distances common to timber harvest and, by extension, aerial herbicide activities. In fall 2022, we will use ArcGIS layers to determine distances to waterbodies (lakes, ponds, rivers, streams, wetlands, and vernal pools) and SALOs as submitted in the 2022 spray plans from all of the companies conducting this work in 2022.

Future Activities-

A new approach to water quality sampling needs to be finalized once the data from the mapping investigation are obtained. While visiting the areas an additional complication to the study design was the proximity of multiple spray plots. This complicates the previous sampling plan but does open the door to a new approach. We noticed that with many sites draining into a single watershed that downstream sampling could provide an integrated understanding of the extent of pesticide movement within the watershed. Small boat launches in particular provide a high ‘touch point’ where public exposure might occur if pesticides were present in the watershed. Sampling from boat launches allows a focus on protection of human health as boat launches are frequently used by people to fish and swim.

The previous sampling plan’s aim was to capture both day-of application drift and run-off over time. Moving forward, fewer sites with increased data collection per site might be more appropriate. Drift collectors set in the forest around a spray area will likely collect more data than surface water sampling.

A combination of integrated watershed water sampling to detect the general prevalence and site-specific drift sampling might provide a better dataset for understanding the scope of offsite movement rather than the previous sampling plan given the actual practices used by our local industry.

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JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: Pamela J. Bryer, Ph.D. | Pesticides Toxicologist | Maine Board of Pesticides Control

Subject: Pesticide Sales and Use Reporting Update

Date: December 2, 2022

This update memo is intended to provide the status of ongoing data entry of pesticide use and sales data. Perpetual interest in pesticide use and sales data prompted the BPC to hire a temporary worker to manually enter annual use summary data submitted by licensed commercial applicators. The intention of this work is to compile as many sales and use records as possible, with the goal of entering at least five years of data.

Sales Data Entry-
To date, sales data have only been partially entered.

Use Data Entry-
Three years of application data (2018, 2019, & 2020) have been entered into the Maine BPC on-line portal database (Maine Pesticide Enforcement, Registration and Licensing System or MePERLS).

Despite continual interest from the public, fewer than ten states publish pesticide use data. This lack of data is largely because of the huge effort required to collect and process these records. Pesticide application records data entry requires advanced knowledge of the material and comfort with chemistry basics. In Maine, there are roughly 13,000 unique product labels that can be used which means that it is difficult to become familiar with the entries. The data entry is time-consuming for several reasons. Annual use summaries are submitted as paper documents and as such, each entry must be entered into the database by hand. As data are entered omissions, poor handwriting, and mistakes become obvious and the applicator must be contacted to clarify the issue. The first year's worth of data took roughly five to six months at 20 hours per week to be entered into MePERLS. Subsequent years have taken less time.

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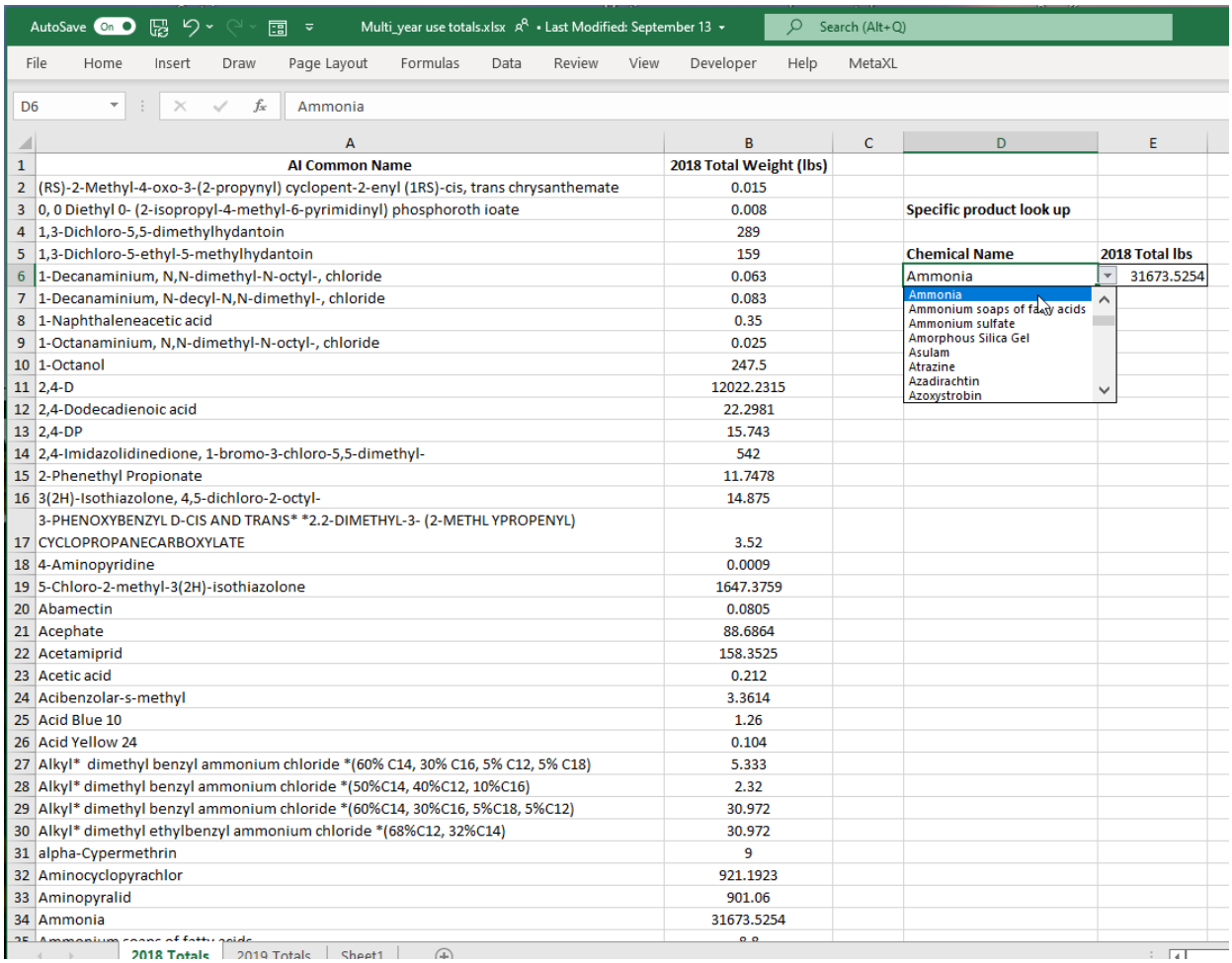
Use Statistics-
The data entered into the MePERLS database are not serviceable data and require significant ‘clean-up’. Significant chemistry typographical errors in the reported chemical names occur frequently. Different names for the same compound also create confusion. When this happens, active ingredient synonyms must be sought and the entry re-labeled prior to compiling lists. Additionally, active ingredients with multiple forms are categorized together, for instance, glyphosate isopropylamine salt and glyphosate ammonium salt are both reported simply as glyphosate. Each year’s list clean-up and re-organization can take days. This summer, we developed formulas for use in Excel spreadsheets that greatly reduces the amount of time dataset clean-up takes. Currently, a year’s worth of use summaries takes about an afternoon for clean-up to go from the database entries to a presentable table tallying the entire year.

Future functionality to our data presentation is to provide a list of the ‘sites’ as entered by the applicators for each active ingredient using the dropdown feature, e.g., after dazomet and its weight would be a listing as follows: “paper machine”, “pigment tanks”, “pigment tank”.



AI Common Name	2018 Total Weight (lbs)
(RS)-2-Methyl-4-oxo-3-(2-propynyl) cyclopent-2-enyl (1RS)-cis, trans chrysanthemate	0.015
0, 0 Diethyl 0- (2-isopropyl-4-methyl-6-pyrimidinyl) phosphoroth ioate	0.008
1,3-Dichloro-5,5-dimethylhydantoin	289
1,3-Dichloro-5-ethyl-5-methylhydantoin	159
1-Decanaminium, N,N-dimethyl-N-octyl-, chloride	0.063
1-Decanaminium, N-decyl-N,N-dimethyl-, chloride	0.083
1-Naphthaleneacetic acid	0.35
1-Octanaminium, N,N-dimethyl-N-octyl-, chloride	0.025
1-Octanol	247.5
2,4-D	12022.2315
2,4-Dodecadienoic acid	22.2981
2,4-DP	15.743
2,4-Imidazolidinedione, 1-bromo-3-chloro-5,5-dimethyl-	542
2-Phenethyl Propionate	11.7478
3(2H)-Isothiazolone, 4,5-dichloro-2-octyl-	14.875
3-PHENOXYBENZYL D-CIS AND TRANS* *2.2-DIMETHYL-3- (2-METHL YPROPENYL) CYCLOPROPANECARBOXYLATE	3.52
4-Aminopyridine	0.0009
5-Chloro-2-methyl-3(2H)-isothiazolone	1647.3759
Abamectin	0.0805
Acephate	88.6864
Acetamiprid	158.3525
Acetic acid	0.212
Acibenzolar-s-methyl	3.3614
Acid Blue 10	1.26
Acid Yellow 24	0.104
Alkyl* dimethyl benzyl ammonium chloride *(60% C14, 30% C16, 5% C12, 5% C18)	5.333
Alkyl* dimethyl benzyl ammonium chloride *(50%C14, 40%C12, 10%C16)	2.32
Alkyl* dimethyl benzyl ammonium chloride *(60%C14, 30%C16, 5%C18, 5%C12)	30.972
Alkyl* dimethyl ethylbenzyl ammonium chloride *(68%C12, 32%C14)	30.972
alpha-Cypermethrin	9
Aminocyclopyrachlor	921.1923
Aminopyralid	901.06
Ammonia	31673.5254

Screenshot of 2018 pesticide use summary table. These data and this drop-down search tool are planned for inclusion on the BPC website.

Examples of difficulties summarizing data-

Staff have determined that reliably designating site of use will not be possible without some change in the record-keeping/ reporting process. [As a reminder, 'site' is a term of art in pesticides which very specifically links the label language to the pesticide use, where it describes the intended target. It identifies where the product will be used, i.e., which crop or structure, it is not a physical location where the pesticide was applied.] Additional applicator education on how to fill out the form or a change in the form's design are likely needed and ideally both would occur. Some of the entries are entered wrong, but the larger issue is that the data we need to summarize isn't being asked for in a manner that results in consistent submission. For example, for the purposes of data summarization, it would be appropriate to separate residential turf from school turf from commercial lot turf. It is not possible to scrutinize each row of data and determine, based on the application company and the active ingredient, which use is most likely.

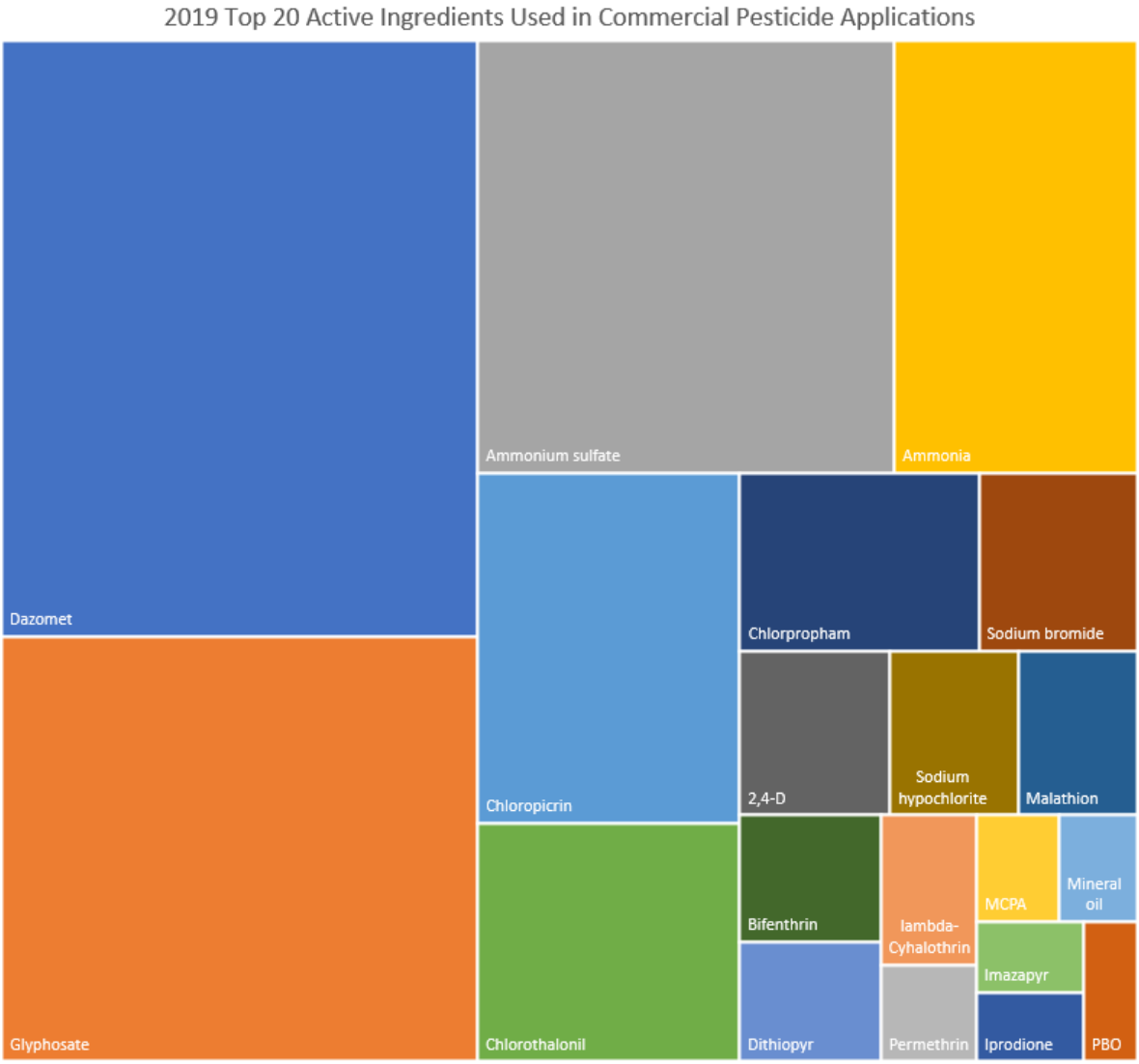
Synonyms of -turf-
Lawn
Rough
Field
Yard
Athletic Facilities
Greens

Data originating from commercial use summary reports tells a portion of the story but summarizing use for any of the important commodity groups is not possible. Due to growers relying on a mixture of commercial and private licenses our records will always only represent a very small portion of actual use patterns. In previous years, BPC inspectors implemented an anonymous Ag Use Survey during inspections that allowed staff a mechanism to understand how pest pressures were being resolved.

The current reported data summarizes the types of pesticides used, the total volume used, and the site. These data do not connect the pesticide used with the intended purpose. Requiring these records of use to be tied to the license category would improve the ability to understand use patterns more clearly.

Currently, the data are frequently used in-house to do specific research and can answer questions like: what companies with X licensure are using this active ingredient? or how often does active ingredient Y appear in our records. The issues mentioned above concern combining all the data into a larger dataset to answer bigger trend questions and that is the current difficulty. The return on investment for the effort put into organizing a useful database is a consideration. If the tallied data do not have a policy purpose additional time and money may not be warranted.

Example of entered use summary data-
The current data aid in understanding the volume of each active ingredient used in the state annually. In the treemap graphic below the size of the rectangle represents the proportion of the total pesticide use that belongs to each specific active ingredient. This representation combines liquid and dry reporting.



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GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: Megan Patterson | Director | Maine Board of Pesticides Control

Subject: Board Planning Sessions

Date: December 2, 2022

Request
In recent years, staff have been tasked with numerous competing directives. Historically, the Board held planning sessions to assist staff with prioritizing projects and the allocation of resources. Staff would like the Board to discuss the possible reintroduction of this process and topics for review.

Background
Prior to 2014, the Board periodically held informal planning sessions with the entire staff to review Board concerns, issues and priorities. Board members or staff submitted topics for potential discussion at the planning session. The Board then prioritized the proposed topics and discussed them in order of priority as time permitted. In 2013, the following topics were proposed by Board members or staff for potential discussion at the annual planning session.

- Collaboration with Integrated Pest Management Council
    - Grants for IPM
- 25' setback exemption for invasive plant control
- Staff issuance of variances
    - Chapter 22 variances for identifying Sensitive Areas
    - Guidelines/BMPs for variances to control invasive plants near surface water
- Certification for people who make pesticide recommendations
- Policy on posting personal information from comments that are received
- Policy on complaints/sampling and responding to applicators
- Enforcement case turnaround time
- Consent agreement fine structure
- Other rulemaking? Licensing chapters?
- Enforceability of pesticide laws
- Educational outreach priorities
- Reducing reliance on pesticides
    - Staff involvement in the YardScaping program

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    - Retail sign and BPC slogan
- Awareness and operation of the notification provisions contained in Chapter 28
- Board meeting during the Maine Agricultural Trades Show?
- Update on the GMO labeling law
- More exam training for growers
- Better online recertification options
- Streamlining of the licensing process

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GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: Megan Patterson | Director | Maine Board of Pesticides Control

Subject: Affidavit Submission Extension and By Request Limited Duration Extensions

Date: December 2, 2022

In 2021 and 2022, the Board conducted rulemaking in response to LD 264—Resolve, Directing the Board of Pesticides Control To Gather Information Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State. This resolve directed the Board to amend its rules addressing product registration and require the submission of specific affidavits. Specifically, the Board was directed to "require manufacturers and distributors to provide affidavits stating whether the registered pesticide has ever been stored, distributed or packaged in a fluorinated high-density polyethylene container and to require manufacturers to provide an affidavit stating whether a perfluoroalkyl or polyfluoroalkyl substance is in the formulation of the registered pesticide."

The Board finally adopted these rules on April 1, 2022. Staff communicated these regulatory changes to pesticide product registrants. Staff also worked with contracted developers to create functionality to collect affidavits in the pesticide product registration and renewal process. This work was completed prior to the November 1 start of the registration renewal season. However, some registrants have indicated that they need additional time to address confidential business and trade secret information.

Affidavit submission is now a mandatory component of product registration and registration renewal. Product registrations expire on December 31 each year. To permit an extension for the submission of affidavits it is simplest if companies are permitted an extension for the submission of product registration renewal.

For those companies seeking an extension on the submission of affidavits, staff is proposing a limited duration extension of the submission of product registration renewal of no greater than two months, to end on February 28, 2023. Extensions will only be provided for those companies who request an extension and provide sufficient reason for the request in writing.

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AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: John Pietroski | Manager of Pesticide Programs | Maine Board of Pesticides Control

Subject: Reciprocity for the State of Maine Certification and Training Plan, Section 11.

Date: December 2, 2022

Introduction

The State of Maine Plan includes a section on reciprocity. This section must explain the circumstances under which the Maine State Plan will or will not reciprocally certify applicators based in whole or in part on their holding of a valid current certification issued by another State, Tribe or Federal agency. *SECTION 11 RECIPROCITY* of the Maine State Plan details reciprocity.

Chapter 31: CERTIFICATION AND LICENSING PROVISIONS/COMMERCIAL APPLICATORS, Section 6, B, allows staff to issue a limited term reciprocal license. The rule reads, '*Nonresident licenses. When the staff determines that a pest management emergency exists which necessitates the use of aerial application and for which there are not sufficient qualified Maine licensees, it may issue a license without examination to nonresidents who are licensed or certified by another state or the Federal Government substantially in accordance with the provisions of this chapter. Nonresident licenses issued pursuant to this section are effective until December 31 of the year in which they are issued.'*

If there is an emergency and the BPC decides to grant reciprocity, an applicator's current license will need to be evaluated for the following criteria.

1. The license is valid for the state in which it was awarded.
2. The applicator is in good standing with the state where the license was awarded.
3. The competency standards meet or exceed the State of Maine standards for the specific category as outlined in Chapter 31: CERTIFICATION AND LICENSING PROVISIONS/COMMERCIAL APPLICATORS.
4. The certified applicators' reciprocal license is only valid for the calendar year.
5. The applicator is 18 years old or older.

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6. The applicator has the appropriate insurance coverage.
7. The specific need for their services is immediate as determined by the BPC, thus not allowing the applicator time to follow the proper procedures for licensure in Maine.
8. The applicator must abide by all laws and rules of the State of Maine.
9. The applicator will be required to file all of the appropriate reports as required by the BPC.
10. The applicator must pay appropriate licensing fees.
11. The applicator will be provided a copy of the written regulations manual.

The points highlighted are not in rule.

The staff is asking for your input and recommendations before submitting the plan to the EPA.

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GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control

From: John Pietroski | Manager of Pesticides Programs | Maine Board of Pesticides Control

Subject: Recertification Standards for the State of Maine Certification and Training Plan, Section 8.

Date: December 2, 2022

Introduction

The EPA has requested that the Maine State Plan include standards for recertification for applicators of restricted use pesticides that meet or exceed standards set forth by the EPA. The standards are located in *SECTION 8. RECERTIFICATION STANDARDS 40 CFR § 171. 107* of our plan.

A draft of the guidelines for in-person, virtual, taped video courses and on-line courses that charge a fee are attached to this memorandum. A copy of *40 CFR § 171.107 Standards for recertification of certified applicators* is also included.

Please note that many of the standards are already in rule and some of the others have been brought to the Boards attention. New requirements are emphasized in the attached draft.

The staff is asking for your input and recommendations before submitting the plan to the EPA.

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Guidelines for In-Person, Virtual, Taped Video Courses and On-Line Courses that Charge a Fee.

11/21/2022

The Board of Pesticides Control (BPC) has established a list of guidelines to help trade organizations, agencies, companies, and educational institutions who are developing and submitting recertification programs. This will include programs that are in person, virtual, taped video presentations, and on-line courses that charge a fee.

The BPC already has standard operating procedures in place that must be followed for programs seeking credit approval. That documentation can be found in Chapter 31: CERTIFICATION AND LICENSING PROVISIONS/COMMERCIAL APPLICATORS and Chapter 32: CERTIFICATION AND LICENSING PROVISIONS FOR PRIVATE APPLICATORS.

The following non-highlighted standards are either in existing rules or have been previously reviewed and approved by the Board. Highlighted standards were developed by staff to address increased interest in virtual trainings. These newly proposed standards also reflect the current practices in other EPA Region 1 (New England) states as well as the practices of existing Maine-based training collaborators.

STANDARD OPERATING PROCEDURES FOR ALL RECERTIFICATION PROGRAMS

1. All recertification programs must be approved by BPC staff at least 15 days in advance of the program. The details of the program, including an agenda, must be submitted to the BPC in writing, by email, or through the BPC portal (MePERLS). When the BPC approves a program, an individual "CR Number" is assigned to each individual program and sent to the program sponsor for all future correspondence.
2. One credit will be assigned for each hour of presentation on appropriate topics. Appropriate topics are listed in number 5 below.
3. 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 approved topics.
4. An individual who organizes a meeting shall be required to maintain a sign-up sheet and supervise the signing of the sheet by all applicators attending the program. That individual shall submit that sign-up at the same time as the verification forms are collected in person. If the recertification program is virtual, the sponsor will provide a copy of the applicators signed up for the program to the BPC. The signup sheet will be sent to the BPC either in writing, by email, or on the BPC Portal (MePERLS) within two weeks after the program date. The information on the signup sheet must include the applicator's legal name, license number, and email address.
5. Credit will be allowed for topics including, but not limited to:
    a. Applicable laws and regulations.
    b. Environmental hazards.
    c. Calibration and new application techniques.
    d. Label review.
    e. Applicator safety.
    f. Storage and disposal.
    g. Pest identification and control.
    h. Integrated pest management.
6. A BPC staff member will not be charged any fee to attend a credit program whether it be in person or virtual.

Applicators must attend the entire approved program(s) for which recertification credit is sought. No other person may complete or sign a verification form on another applicator's behalf. Any form that is completed or signed by a person other than the applicator will be deemed a fraudulent report and will not be approved by the Board for recertification credit(s). Any credit(s) approved by the Board pursuant to an attendance verification form which is subsequently determined by the Board to have been completed or signed by a person other than the applicator shall be

void and may not be counted towards the applicator's recertification requirements; and any recertification issued on the basis of such credits shall be void.

Additionally, there are specific requirements for each type of recertification program.

IN-PERSON

1. An individual who organizes a meeting shall be required to maintain a sign-up sheet and supervise the signing of the sheet by all applicators attending the program.
2. The sign-up sheet and verification attendance forms will be collected at the end of the program by a BPC staff member or designated individual approved by the BPC. That individual shall submit that sign-up at the same time as the verification forms are collected in person. The signup sheet will be sent to the BPC either in writing, by email, or through the BPC portal (MePERLS) within two weeks after the program date. The information on the signup sheet must include the applicator's full legal name, license number, and email address.

VIRTUAL

1. At least 15 days before the program, the individual who organizes a meeting must provide the virtual program link for applicators to register for meetings open to the public. This link will be posted on the BPC credit calendar. If the program is not open to the public, a link is still required to allow BPC staff to monitor the program.
2. The individual must be able to verify that the applicators seeking credits watched the entire program by one or both of the following methods:
    1. Offering a quiz after the presentation for which passing score must be 80 percent or greater; OR
    2. Offering poll questions during the presentation. For this verification approach:
        a. the sponsor will digitally record the answers to the poll questions,
        b. poll questions will be displayed at least every 15 minutes, and
        c. attendees seeking credit must answer 75 percent of the poll questions.
3. The individual must provide the BPC with a verified list of applicators which includes each applicator's full legal name, Maine license number(s), and email address of the applicator within two weeks from the program date.

TAPED VIDEOS

1. The individual who organizes a training must provide a copy of the video and a relevant quiz to the BPC for review at least 15 days in advance of offering the training to the public via the BPC credit calendar or to specific trade organizations, agencies, companies, and educational institutions.
2. The individual must be able to verify the applicators seeking credit by requiring completion of a quiz after the video for which the passing score must be 80 percent or greater.
3. An individual who organizes a meeting must maintain a sign-up sheet and must supervise and verify the signing of the sheet by all applicators attending the program. The individual must, within two weeks after the program date, provide the BPC with a sign-up sheet which includes each applicator's full legal name, Maine license number(s), and email address.
4. That individual shall, at the same time, collect and submit the sign-up sheet and completed quizzes* to the BPC.

5. *Where BPC staff members are attending in-person, the required quiz may be replaced with verification attendance forms.

ONLINE COURSES THAT CHARGE A FEE

The Board of Pesticides Control (BPC) offers numerous pre-approved online recertification credit programs. These programs charge a fee which is paid for by the attendee. A list of these programs can be found at: https://www.maine.gov/dacf/php/pesticides/credit_calendar.shtml

1. The persons organizing such trainings must provide, for BPC review, a copy of the video or link to the video and a quiz.
2. The persons organizing the training must be able to verify the applicators seeking credit by offering a quiz after the video for which the passing score needs to be 80 percent or greater
3. The persons organizing the training must provide the BPC with the applicator's full legal name, Maine license number(s), and email address within two weeks of program completion.
4. The organization must provide the date on which the applicator purchased the training video as well as the date on which the applicator successfully completed the quiz.

§ 171.107 Standards for recertification of certified applicators.

(a) ***Maintenance of continued competency.*** Each commercial and private applicator certification shall expire five years after issuance, unless the applicator is recertified in accordance with this section. A certifying authority may establish a shorter certification period. In order for a certified applicator's certification to continue without interruption, the certified applicator must be recertified under this section before the expiration of his or her current certification.

(b) ***Process for recertification.*** Minimum standards for recertification by written examination, or through continuing education programs, are as follows:

(1) ***Written examination.*** A certified applicator may be found eligible for recertification upon passing a written examination approved by the certifying authority and that is designed to evaluate whether the certified applicator demonstrates the level of competency required by § 171.103 for commercial applicators or § 171.105 for private applicators. The examination shall conform to the applicable standards for examinations set forth in § 171.103(a)(2) of this part.

(2) ***Continuing education programs.*** A certified applicator may be found eligible for recertification upon successfully completing a continuing education program pursuant to the certifying authority's EPA-approved certification plan.

(i) The quantity, content, and quality of a continuing education program to maintain applicator certification must be sufficient to ensure the applicator continues to demonstrate the level of competency required by § 171.103 for commercial applicators or § 171.105 for private applicators.

(ii) Any continuing education course or event relied upon for applicator recertification must be approved by the certifying authority as being suitable for its purpose in the certifying authority's recertification process.

(iii) A certifying authority must ensure that any continuing education course or event, including an online or other distance education course or event, relied upon for applicator recertification includes a process to verify the applicator's successful completion of the course or event.

Permit	Agency
CWA Section 402 Stormwater and Construction Dewatering Permits.	Tennessee Department of Environment and Conservation.
NHPA Section 106 Consultation.	Tennessee State Historic Preservation Office.
ESA Section 7 Consultation.	U.S. Fish and Wildlife Service.

Environmental Mailing List

This notice is being sent to the Commission's current environmental mailing list for the Project which includes the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American Tribes; other interested parties; and local libraries and newspapers. This list also includes all affected landowners (as defined in the Commission's regulations) who are potential right-of-way grantors, whose property may be used temporarily for Project purposes, or who own homes within certain distances of aboveground facilities, and anyone who submits comments on the Project and includes a mailing address with their comments. Commission staff will update the environmental mailing list as the analysis proceeds to ensure that Commission notices related to this environmental review are sent to all individuals, organizations, and government entities interested in and/or potentially affected by the proposed Project. State and local government representatives should notify their constituents of this proposed project and encourage them to comment on their areas of concern.

If you need to make changes to your name/address, or if you would like to remove your name from the mailing list, please complete one of the following steps:

(1) Send an email to *GasProjectAddressChange@ferc.gov* stating your request. You must include the docket number CP22–493–000 in your request. If you are requesting a change to your address, please be sure to include your name and the correct address. If you are requesting to delete your address from the mailing list, please include your name and address as it appeared on this notice. This email address is unable to accept comments.

OR

(2) Return the attached ''Mailing List Update Form'' (appendix 2).

Additional Information

Additional information about the Project is available from the Commission's Office of External Affairs, at (866) 208–FERC, or on the FERC website at *www.ferc.gov* using the eLibrary link. Click on the eLibrary link, click on ''General Search'' and enter the docket number in the ''Docket Number'' field, excluding the last three digits (*i.e.,* CP22–493). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at *FercOnlineSupport@ferc.gov* or (866) 208–3676, or for TTY, contact (202) 502–8659. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

Any planned public sessions or site visits will be posted on the Commission's calendar located at *https://www.ferc.gov/news-events/events* along with other related information.

Dated: September 7, 2022.

Kimberly D. Bose,

Secretary.

[FR Doc. 2022–19720 Filed 9–12–22; 8:45 am]

BILLING CODE 6717–01–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–10194–01–OA]

National Environmental Justice Advisory Council Notice of Charter Renewal

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of charter renewal.

SUMMARY: Notice is hereby given that the Environmental Protection Agency (EPA) has determined that, in accordance with the provisions of the Federal Advisory Committee Act (FACA), the National Environmental Justice Advisory Council (NEJAC) is necessary and in the public interest in connection with the performance of duties imposed on the agency by law. Accordingly, NEJAC will be renewed for an additional two-year period. The purpose of the NEJAC is to provide advice and recommendations to the Administrator about issues associated with integrating environmental justice concerns into EPA's outreach activities, public policies, science, regulatory, enforcement, and compliance decisions.

FOR FURTHER INFORMATION CONTACT: Inquiries may be directed to Paula Flores-Gregg, NEJAC Designated Federal Officer, U.S. EPA, 1200 Pennsylvania Avenue NW (Mail Code 2202A), Washington, DC 20460; by telephone at (214) 665–8123; via email at *nejac@epa.gov.*

Matthew Tejada,

Director for the Office of Environmental Justice.

[FR Doc. 2022–19668 Filed 9–12–22; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[EPA–HQ–OPP–2022–0542; FRL–9985–01–OCSPP]

Pesticides; Proposed Removal of PFAS Chemicals From Approved Inert Ingredient List for Pesticide Products

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: EPA is proposing to remove twelve chemicals from the current list of inert ingredients approved for use in pesticide products because these inert ingredients have been identified as per- and polyfluoroalkyl substances (PFAS) and they are no longer used in any registered pesticide product.

DATES: Comments must be received on or before October 13, 2022.

ADDRESSES: Submit your comments, identified by docket identification (ID) number EPA–HQ–OPP–2022–0542, through the *Federal eRulemaking Portal* at *https://www.regulations.gov.* Follow the online instructions for submitting comments. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Additional instructions on commenting and visiting the docket, along with more information about dockets generally, is available at *https://www.epa.gov/dockets.*

FOR FURTHER INFORMATION CONTACT: Marietta Echeverria, Registration Division (7505T), Office of Pesticide Programs, Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, DC 20460–0001; main telephone number: (202) 566–1030; email address: *RDFRNotices@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. Executive Summary

A. Does this action apply to me?

You may be potentially affected by this action if you engage in activities related to the registration of pesticide products, including but not limited to, the use of approved inert ingredients

used in registered pesticide products. The following list of North American Industrial Classification System (NAICS) codes is not intended to be exhaustive, but rather provides a guide to help readers determine whether this document applies to them. Potentially affected entities may include:

- Entities engaging in the formulation and preparation of agricultural and household pest control chemicals or pesticide and other agricultural and household pest control chemicals or inert manufacturers and those who make proprietary inert ingredient formulations or pesticide and other agricultural chemical manufacturing generally (NAICS code 325320).

If you have any questions regarding the applicability of this action to a particular entity, consult either person listed under **FOR FURTHER INFORMATION CONTACT**.

B. What is the Agency's authority for taking this action?

This action is issued under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136–136y.

C. What action is the Agency taking?

EPA is proposing to remove the following twelve chemicals from the current list of inert ingredients approved for use in pesticide products:

- 2-Chloro-1,1,1,2-tetrafluoroethane (CAS Reg. No. 2837–89–0)
- a-(Cyclohexylmethyl)-w-hydropoly(difluoromethylene) (CAS Reg. No. 65530–85–0)
- Dichlorotetrafluoroethane (CAS Reg. No. 1320–37–2)
- Ethane, 1,1,1,2,2-pentafluoro- (CAS Reg. No. 354–33–6)
- Hexafluoropropene, polymer with tetrafluoroethylene (CAS Reg. No. 25067–11–2)
- Montmorillonite-type clay treated with polytetrafluoroethylene (No CAS Reg. No.)
- Poly(difluoromethylene), a-chloro-w-(1-chloro-1-fluoroethyl) (CAS Reg. No. 131324–06–6)
- Poly(difluoromethylene), a-chloro-w-(2,2-dichloro-1,1,2-trifluoroethyl)- (CAS Reg. No. 79070–11–4)
- Poly(difluoromethylene), a-(2,2-dichloro-2-fluoroethyl)-, w-hydro- (CAS No. 163440–89–9)
- Poly(difluoromethylene), a-fluoro-w-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]- (CAS Reg. No. 65530–66–7)
- Poly(oxy-1,2-ethanediyl), a-hydro-w-hydroxy-, ether with a-fluoro-w-(2-hydroxyethyl)poly(difluoromethylene) (1:1) (CAS Reg. No. 65545–80–4); and
- Propane, 1,1,1,2,3,3,3-heptafluoro- (CAS Reg. No. 431–89–0).

None of these twelve chemicals are currently being used as an inert ingredient in a pesticide product. EPA believes it is appropriate to remove these chemicals from the inert ingredient list in order to prevent the introduction of these PFAS into pesticide formulations without additional EPA review.

Once an inert ingredient is removed from the list, any proposed future use of the inert ingredient would need to be supported by data provided to and reviewed by the EPA as part of a new inert ingredient submission request. The type of data needed to evaluate a new inert ingredient may include, among others, studies to evaluate potential carcinogenicity, adverse reproductive effects, developmental toxicity, genotoxicity as well as environmental effects associated with any chemical substance that is persistent or bioaccumulative. Information regarding the inert ingredient approval process may be found at *https://www.epa.gov/pesticide-registration/inert-ingredients-regulation*.

EPA suggests that pesticide registrants review their records to ensure that the chemical substances, listed by chemical name and Chemical Abstracts Service Registry Number (CAS Reg. No.), listed in the docket for this action are, in fact, no longer used as inert ingredients in their registered pesticide products. While EPA has endeavored to prepare an accurate list, if a pesticide registrant is aware of a registered product containing any of the twelve chemical substances, that registrant should contact the Agency directly, using the contact listed under **FOR FURTHER INFORMATION CONTACT**.

Similarly, producers of proprietary mixtures currently approved for use as inert ingredients in pesticide products should also review their records to ensure that the chemical substances listed in the docket for this action are, in fact, not currently used in their proprietary mixtures.

D. What should I consider as I prepare my comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through *https://www.regulations.gov* or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD–ROM that you mail to EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for preparing your comments.* When preparing and submitting your comments, see the commenting tips at *https://www.epa.gov/dockets/commenting-epa-dockets*.

II. Background

A. What are inert ingredients?

Most pesticide products contain substances in addition to the active ingredient(s) that are referred to as inert ingredients or sometimes as ''other ingredients.'' An inert ingredient generally is any substance (or group of similar substances) other than an active ingredient that is intentionally included in a pesticide product. Examples of inert ingredients include emulsifiers, solvents, carriers, aerosol propellants, fragrances, and dyes. Additional information about inert ingredients, including requirements, guidance and the InertFinder tool, can be accessed at *https://www.epa.gov/pesticide-registration/inert-ingredients-regulation*.

B. Why is EPA taking this action?

PFAS are synthetic organic compounds that do not occur naturally in the environment but have widespread use in commerce. The strong carbon-fluorine bonds of PFAS make some of them resistant to degradation and thus highly persistent in the environment. Some PFAS have been detected in wildlife and in humans, indicating that at least some PFAS have the ability to bioaccumulate. Thus, exposure to PFAS is an urgent public health and environmental issue in the United States. As part of its strategic roadmap to address risks posed by PFAS (*https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf*), EPA identified some specific actions to further the Agency's directives to research, restrict, and remediate PFAS.

EPA maintains a list of chemical substances that have been approved for use as inert ingredients in pesticide products. Inert ingredients on this list do not need further approval prior to inclusion in a pesticide formulation for a non-food use. These individual formulations are subject to data requirements in 40 CFR part 158, regardless of whether the inert ingredient is on the approved list. If an application for registration of a pesticide product includes inert ingredients not on the approved list, the inert ingredient will need approval and require payment

of a fee in accordance with section 33 of FIFRA, 7 U.S.C. 136w–8.

As part of the ''whole-of-agency'' approach to reduce PFAS use and releases, EPA has reviewed the Agency's list of chemical substances that have been approved for use as inert ingredients in pesticide products to determine whether any of these inert ingredients are PFAS. Based on that review, EPA is proposing the removal of twelve chemicals from the current list of inert ingredients approved for use in pesticide products (given in Unit I.C.) that have been identified as PFAS and for which there are no uses as inert ingredient in any currently registered pesticide products.

After the close of the comment period, EPA will consider all comments received and determine appropriate action.

Authority: 7 U.S.C. 136 *et seq.*

Dated: August 29, 2022.

Michal Freedhoff,

Assistant Administrator, Office of Chemical Safety and Pollution Prevention.

[FR Doc. 2022–19008 Filed 9–12–22; 8:45 am]
BILLING CODE 6560–50–P

FEDERAL RESERVE SYSTEM

Proposed Agency Information Collection Activities; Comment Request

AGENCY: Board of Governors of the Federal Reserve System.

ACTION: Notice, request for comment.

SUMMARY: The Board of Governors of the Federal Reserve System (Board) invites comment on a proposal to extend for three years, with revision, the Payment Systems Surveys (OMB No. 7100–0332).

DATES: Comments must be submitted on or before November 14, 2022.

ADDRESSES: You may submit comments, identified by FR 3054, by any of the following methods:

- Agency Website: *https://www.federalreserve.gov/.* Follow the instructions for submitting comments at *https://www.federalreserve.gov/apps/foia/proposedregs.aspx.*
- *Email: regs.comments@federalreserve.gov.* Include the OMB number or FR number in the subject line of the message.
- *Fax:* (202) 452–3819 or (202) 452–3102.
- *Mail:* Federal Reserve Board of Governors, Attn: Ann E. Misback, Secretary of the Board, Mailstop M–4775, 2001 C St. NW, Washington, DC 20551.

All public comments are available from the Board's website at *https://www.federalreserve.gov/apps/foia/proposedregs.aspx* as submitted, unless modified for technical reasons or to remove personally identifiable information at the commenter's request. Accordingly, comments will not be edited to remove any confidential business information, identifying information, or contact information. Public comments may also be viewed electronically or in paper in Room M–4365A, 2001 C St. NW, Washington, DC 20551, between 9:00 a.m. and 5:00 p.m. on weekdays. For security reasons, the Board requires that visitors make an appointment to inspect comments. You may do so by calling (202) 452–3684. Upon arrival, visitors will be required to present valid government-issued photo identification and to submit to security screening in order to inspect and photocopy comments.

Additionally, commenters may send a copy of their comments to the Office of Management and Budget (OMB) Desk Officer for the Federal Reserve Board, Office of Information and Regulatory Affairs, Office of Management and Budget, New Executive Office Building, Room 10235, 725 17th Street NW, Washington, DC 20503, or by fax to (202) 395–6974.

FOR FURTHER INFORMATION CONTACT: Federal Reserve Board Clearance Officer—Nuha Elmaghrabi—Office of the Chief Data Officer, Board of Governors of the Federal Reserve System, *nuha.elmaghrabi@frb.gov,* (202) 452–3884.

SUPPLEMENTARY INFORMATION: On June 15, 1984, OMB delegated to the Board authority under the Paperwork Reduction Act (PRA) to approve and assign OMB control numbers to collections of information conducted or sponsored by the Board. In exercising this delegated authority, the Board is directed to take every reasonable step to solicit comment. In determining whether to approve a collection of information, the Board will consider all comments received from the public and other agencies.

During the comment period for this proposal, a copy of the proposed PRA OMB submission, including the draft reporting form and instructions, supporting statement, and other documentation, will be made available on the Board's public website at *https://www.federalreserve.gov/apps/reportforms/review.aspx* or may be requested from the agency clearance officer, whose name appears above. Final versions of these documents will be made available at *https://www.reginfo.gov/public/do/PRAMain,* if approved.

Request for Comment on Information Collection Proposal

The Board invites public comment on the following information collection, which is being reviewed under authority delegated by the OMB under the PRA. Comments are invited on the following:

a. Whether the proposed collection of information is necessary for the proper performance of the Board's functions, including whether the information has practical utility;

b. The accuracy of the Board's estimate of the burden of the proposed information collection, including the validity of the methodology and assumptions used;

c. Ways to enhance the quality, utility, and clarity of the information to be collected;

d. Ways to minimize the burden of information collection on respondents, including through the use of automated collection techniques or other forms of information technology; and

e. Estimates of capital or startup costs and costs of operation, maintenance, and purchase of services to provide information.

At the end of the comment period, the comments and recommendations received will be analyzed to determine the extent to which the Board should modify the proposal.

Proposal Under OMB Delegated Authority To Extend for Three Years, With Revision, the Following Information Collection

Collection title: Payment Systems Surveys.

Collection identifier: FR 3054.

OMB control number: 7100–0332.

Frequency: FR 3054a, five times per year; FR 3054b, annually; FR 3054c, semi-annually; FR 3054d, five times per year; and FR 3054e, ten times per year.

Respondents: The FR 3054 panel comprises financial institutions (including depository institutions), law enforcement, nonfinancial businesses (retailers, banknote equipment manufacturers, or global wholesale bank note dealers), and individuals within the general public.

Estimated number of respondents: FR 3054a, 4,000; FR 3054b, 500; FR 3054c, 25; FR 3054d, 250; and FR 3054e, 250.

Estimated average hours per response: FR 3054a, 0.75; FR 3054b, 0.50; FR 3054c, 30; FR 3054d, 2.5; and FR 3054e, 0.50.

Estimated annual burden hours: FR 3054a, 15,000; FR 3054b, 250; FR 3054c, 1,500; FR 3054d, 3,125; and FR 3054e, 1,250.

General description of collection: The Payment Systems Surveys are used to

CIVIL EATS

12b

New Evidence Shows Pesticides Contain PFAS, and the Scale of Contamination Is Unknown

The EPA knows that plastic containers are leaching toxic 'forever chemicals' into pesticides. But PFAS are also ending up in pesticides from other sources—in much higher quantities.

BY LISA HELD NOVEMBER 7, 2022

Once a year, researchers, agrichemical company representatives, and government officials get together at a conference dedicated to what they call pesticide stewardship. By their definition, stewardship includes improving the safety of pesticides, from manufacture to use to disposal.

At the most recent event last February, Ed Messina, director of the Office of Pesticide Programs at the U.S. Environmental Protection Agency (EPA), spoke to the virtual crowd. After running through at least a dozen other topics, he turned to per- and polyfluoroalkyl substances, or PFAS—"forever chemicals" that companies have used for decades in products including non-stick pans, takeout containers, and cosmetics—causing long-term damage to the environment and human health.

Recent tests had detected PFAS in pesticides, Messina told the group.

The agency planned to release the results of more thorough tests done to determine whether PFAS were leaching from plastic containers into the pesticides, he added. "The data does indicate that the amount of PFAS entering the environment [via pesticides] is extremely small," he assured attendees, "but we do want to get a handle on where the PFAS is coming from."

Now, the EPA has released the results of the study on leaching, which confirmed the issue. But while the agency maintains Messina's assertion that the amount getting into the environment as a result is not significant, it's not the only source.

Investigation Highlights

• Scientists in multiple labs have found dangerous levels of PFAS in commonly used pesticides.
• EPA tests have confirmed some PFAS are leaching from plastic containers into the pesticides.
• Civil Eats discovered that two other sources of PFAS in pesticides—inert ingredients added to help disperse the chemicals and the pesticides themselves—could lead to higher levels of contamination of soil, water, and food.
• Maine, the first state to try to restrict PFAS in pesticides, is wrestling with how to identify and regulate these emerging sources.

A Civil Eats investigation has found that leaching is only one of three sources of PFAS in pesticides. In addition, the scale of PFAS contamination in pesticides is far from understood. Using an internationally recognized definition, dozens of pesticides registered in the U.S. inherently qualify as PFAS themselves, based on their molecular structure, and some PFAS are still approved by the EPA as additives to pesticide formulations.

In a recent email, the EPA told Civil Eats it "will continue to look closely at existing pesticide products to determine whether they contain PFAS as a result of the active

and evolves, EPA will also continue to follow the science and adjust, as appropriate, to help ensure that pesticide products do not cause unreasonable adverse effects on human health or the environment."

While recent data suggests the levels of PFAS in pesticides are lower than the concentrations found in now-familiar sources of contamination such as firefighting foam and sewage sludge, advocates are alarmed by the volume: Every year, farmers apply about 1 billion pounds of pesticides to nearly 900 million acres, touching soil, water, and food. Since so few pesticides have been tested, it's impossible to say how many might be contaminated, but even a tiny percentage would be significant, experts say.

"Not everybody you know is buying carpets with PFAS in them, and not everybody is exposed to firefighting foam," said Ruth Berlin, director of the Maryland Pesticide Education Network (MPEN), "but everybody is exposed to pesticides, whether they like it or not."

Many pesticides are associated with health risks (especially at the levels that farmers, farmworkers, and people in neighboring communities are exposed to) and adverse effects on the environment, including harm to aquatic organisms and pollinators. There are thousands of chemicals classified as PFAS with a range of impacts, but some of the most commonly used are linked to an increased risk of multiple cancers, liver damage, reduced immune response, and decreased vaccine response in children. PFAS can also accumulate in fish and other wildlife and can persist in the environment indefinitely. Currently, there is no safety data on the combined effects of PFAS and pesticides.

"That's definitely something that we're very worried about," said Willa Childress, organizing co-director at Pesticide Action Network North America (PANNA). "But the level of contamination we could be talking about is also a huge concern. If there is even moderate contamination in pesticides . . . the exposure and contamination of farmland could already have happened."

A crop duster airplane sprays an organophosphate pesticide on cotton and potato fields near Arvin, California. (Photo by David McNew/Getty Images)

It would also likely be piled onto PFAS from other sources. In mid-October, researchers at Northeastern University estimated that 57,000 sites in the U.S. can be presumed contaminated based on other confirmed sources of PFAS that are already being tracked. One of those sources was sewage sludge, which has already contaminated farms in multiple states. “I’m concerned about *all* sources of PFAS, because these chemicals are never going to leave our environment,” said Linda Birnbaum, a toxicologist who spent 19 years at the EPA and was later the director of the National Institute for Environmental Health Sciences. “It all adds up.”

Hunting for the Source

“Where is it coming from?” is the question that stumped environmental toxicologist Steven Lasee when he began finding PFOS—one of a few PFAS that has been found to be particularly harmful—in a greenhouse used for crop research in 2017. Lasee

that he was finding the chemicals in his control plants and other places where he hadn't planned to find them. He began testing everything around until he homed in on 10 insecticides that had been used on and were stored at the site.

To his surprise, Lasee found PFOS in six out of the 10 chemicals, at levels ranging from 4 million to 19 million parts per trillion (ppt). Although the pesticides are significantly diluted before use and the amount that would end up in waterways is unknown, the levels would still be hundreds of thousands of times higher than what is considered safe to ingest. For comparison, this June, the EPA updated its lifetime health advisory for PFOS in drinking water to 0.02 ppt, a level that's barely detectable. "The EPA is basically saying that no exposure is safe long-term," Lasee said.

One of the insecticides he tested was imidacloprid. In addition to farmers spraying more than a million pounds of the chemical on crops annually, the neonicotinoid is a component of seed coatings used on commodity farms.

At the time, no one was talking about PFAS in pesticides, and Lasee didn't know what to make of his results. That changed last year, when he began to see news coming out of two states.

First, in December 2020, the nonprofit organization Public Employees for Environmental Responsibility (PEER) tested a jug of Anvil 10+10, an insecticide that the state of Massachusetts has sprayed on millions of acres for decades to kill mosquitos. They found it contained multiple PFAS, including about 250 ppt of PFOA. Like PFOS, the EPA's health advisory limit for PFOA is so low (.004 ppt), it's nearly zero. When the state Department of Environmental Protection ran its own tests on a larger set of samples, it found eight different PFAS, including PFOA and PFOS.

In Maryland, PEER executive director Tim Whitehouse then called MPEN's Ruth Berlin. "He said, 'What do you think about testing pesticides used for mosquito control in Maryland?'" she recalled. So MPEN joined forces with PEER to test Permanone 30-30, the insecticide used for the same purpose in Maryland. By March 2021, the results were in: PEER and MPEN's tests found PFOA at 3,500 ppt, along with other PFAS. "In our state, 2,100 communities signed up . . . for mosquito control in the spring," Berlin said. "Some are being sprayed every week, and the pesticide itself is an endocrine disruptor. This is pretty scary stuff."

The EPA stepped in and halted the use of Permanone 30-30, but they allowed the use of a substitute product, she said—and to her dismay, there was no testing done on the new insecticide. In October, the agency ran its own tests on Permanone samples provided by Bayer

and the Maryland Department of Agriculture using a different process and found no detectable PFAS, which muddied the findings.

But they continued their investigation into whether PFAS were leaching from plastic containers into other pesticides. About 20 to 30 percent of the pesticide containers used in agriculture have likely gone through a process called “fluorination,” which makes the plastic stronger but can also produce PFAS.

This August, the EPA released its results. Researchers tested three different brands of containers for 31 different PFAS, taking measurements at different lengths of time, from one day to 20 weeks. They found the same eight PFAS identified in the earlier tests and concluded that PFAS “do leach from container walls into the products they contain” and that the amount increases as pesticides are stored for longer periods of time. As a result, agency officials notified companies that manufacture, use, and dispose of the containers that PFAS formed during the fluorination process “may be a violation of the Toxics Substances Control Act.”

PFAS Used as ‘Inert’ Ingredients

That might have closed the book on how PFAS were getting into pesticides, except that Lasee finally published his study on insecticides around the same time. He and other experts say the EPA’s study was done well and confirms one source: containers. But based on the science, there is almost no way the PFAS *he* found came from containers because of the levels and types identified. “The concentrations I found are essentially around a million times larger,” he said.

And the PFAS he found are mainly from a different family than the ones identified by the EPA. In fact, while it’s impossible to prove whether they had been intentionally added to the pesticides, the types he found are consistent with the PFAS that are commonly used to allow people to spray liquids more effectively, said Graham Peaslee.

Peaslee is a nuclear chemist and a professor at Notre Dame. He has been working on testing for PFAS since 2014 and is now considered one of the country’s top experts. He agreed with Lasee’s contentions that the PFAS levels were “way too high” to have come from the containers and that they were likely added to the formulations. Different PFAS have different “signatures,” he said, and the ones Lasee found are typically used as additives to help disperse liquids. “PFOS is the world’s best dispersal agent,” he said. “It’s a surfactant extraordinaire.”

That would suggest companies were adding PFAS to pesticide formulations as "inert ingredients." These are not the active bug- or weed-killers, but they help make the chemical useful in other ways. The EPA determines which inert ingredients are approved for use, but pesticide companies do not have to disclose them on product labels.

"This has been something that has been highly protected at the industry level for a long time," said Childress at PANNA. "We don't have access as advocates or rural communities really to any information on what's getting sprayed."
In September, the EPA announced that it was removing 12 PFAS from its list of approved inert ingredients. In the press release, the agency said the chemicals it was removing were no longer used in any registered pesticide formulations, but that the action would prevent future use. But the announcement begged the question: Are there any other PFAS still approved for use?

Pesticide toxicologist Pamela Bryer brought up that question at the end of October, at the monthly meeting of the Maine Board of Pesticides Control. First on the agenda was a long discussion of Maine's state law requiring the Board to regulate PFAS in pesticides. When it went into effect at the end of April, it became the first law of its kind.

Bryer said that after the EPA announced that it had removed PFAS from the inert list, the agency held a call with state agencies. "Someone did ask the question, 'Does this mean that all PFAS have been removed from [the inert list]?' And the answer was, 'No,'" she said. By her rough estimation, there may be six or seven others still approved for use that appeared to meet the definition of PFAS, she said.

The EPA did not say whether or not there are still approved inert ingredients that qualify as PFAS, but it said it's currently evaluating the list to "determine if any meet the current structural definition of PFAS or are part of other related chemistries that have been identified by stakeholders as being of concern and if additional data are needed to support the risk assessments for these compounds." The agency said it will share results of that investigation "as soon as possible."

When Pesticides *Are* PFAS

In addition to "inerts," under the new law, Bryer explained at the meeting, Maine's Board would also have to address a list of 69 active pesticide ingredients used in 1,493 products currently on the market. Those would likely qualify as PFAS on their own, she explained, based

Although final determinations are still being made about their classification, it makes sense based on the earlier findings on the plastic containers for pesticides. It turns out containers are not the only products that undergo the process of fluorination. All of the pesticides on the list have undergone some level of fluorination themselves. And in fact, in recent years, fluorination of pesticides has become more common. Not all fluorinated pesticides are PFAS, but some are.

Examples of pesticides that made Maine's list include sulfentrazone and bifenthrin. In 2019, farmers sprayed more than 3 million pounds of sulfentrazone, mainly across pasture and hayfields in the Midwest. They used about 1.3 million pounds of bifenthrin on corn, soybean, cotton, and fruit and vegetable crops in the Midwest and the Mid-Atlantic.

Complicating the issue is the fact that while Maine, the first state to try to regulate PFAS in pesticides, is wrestling with how to classify them, the EPA's Office of Pesticide Programs is defining PFAS differently.

Maine is using a broader definition of PFAS that was established by the Organization for Economic Co-operation and Development (OECD) and is generally recognized as a global standard. But the EPA has adopted a much narrower definition, and experts estimate that it cuts the number of chemicals that qualify in half.

Based on that difference, Bryer said the EPA would likely only consider two of the chemicals on her list PFAS.

The EPA did not confirm that number. But the agency did confirm that there are no regulations that prevent pesticides that qualify as PFAS from being approved for registration. In other words, a pesticide that fits into the PFAS group would be reviewed in the same way as any other "to ensure it meets the FIFRA standard of no unreasonable risks to human health and the environment."

The Path Forward

If Maine is the test case, figuring out how to identify the various sources of PFAS in pesticides and then eliminate them nationwide is going to be a difficult process, to say the least. At the October meeting, Board members in the state frequently expressed a sense of hopelessness around the scale of the task, and despite work on the issue, they are nowhere near meeting deadlines lawmakers set for them. "This is going to be a nightmare," one member said.

Still, some say it's a huge step toward understanding and tackling the issue, especially since starting in 2023, companies registering pesticides for use in Maine will be required to submit affidavits indicating whether their product contains PFAS and whether it has been stored in a fluorinated container. The legislation requires the state to create a public database with some of the information from those affidavits.

"We should be able to look at what these products are and then correlate that with where and how they're being used in our state and start to figure out how big of a problem we have," said Sharon Treat, a public policy consultant in Maine who has been working on the issue.

Of course, if the federal government stepped up, advocates say, states wouldn't have to take on this burden. At a baseline, they argue the agency should be using the broader, globally recognized definition of PFAS. Then, it should require companies to disclose all ingredients in their pesticide formulations, whether inert or active. But the EPA pointed to Section 10 of the federal law that regulates pesticides and does protect the identity of inert ingredients as trade secrets. However, the law does allow for disclosure of the inert ingredient if the agency has determined it "necessary to protect against an unreasonable risk of injury to health or the environment."

An affidavit system similar to what's being set up in Maine could also be effective, PANNA's Childress suggested.

Ruth Berlin at MPEN has a simpler, albeit far-reaching suggestion: "Every pesticide on the market should be tested to ensure it's PFAS-free," she said. In its responses, EPA said it does not have sufficient resources to test all approved pesticides. Without legislation providing those, that's unlikely to happen any time soon. But given the fact that "forever chemicals" could be contaminating water and soil across the country in ways that are next to impossible to undo, it's not a big ask, Treat said. "This is a three-alarm fire. It needs to be dealt with in that way."

Lisa Held is Civil Eats' senior staff reporter. Since 2015, she has reported on agriculture and the food system with an eye toward sustainability, equality, and health, and her stories have appeared in publications including *The Guardian*, *The Washington Post*, and *Mother Jones*. In the past, she covered health and wellness and was an editor at Well+Good. She is based in Baltimore and has a master's degree from Columbia University's School of Journalism. Read more >

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BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
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12c

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

November 8, 2022

Mr. David Schaible
PO Box 126
Nobleboro, ME 04555

RE: Temporary Use Permit for Chlorpyrifos for CMR 01-026, Chapter 41

Dear Mr. Schaible:

The Board of Pesticides Control has reviewed your application for a temporary use authorization permit under CMR-01-026, Chapter 41. The temporary use permit is approved, with the following conditions.

The applicant must continue to possess a valid pesticide applicator license issued by the State. This permit is for one quart of Lorsban (EPA Registration #464-448) and is valid through Spring 2023 or until the possessed product is used in its entirety. Use must be for the control of twig aphid and needle gall midge on Christmas trees and must be consistent with product label requirements.

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.

At its December 2, 2022 meeting, I will alert the Board 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,

Megan L. Patterson

Megan L. Patterson

90 BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-2731
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Director, Board of Pesticides Control