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

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

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

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

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

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

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

CAM LAY, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

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

Form Approved, OMB No. 2070–0055

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

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

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

For State Use Only
Registration No. Assigned
Date Registration Issued

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

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

3. Active Ingredient(s) in Product
Mesotrione

4. Product Name
Callisto® Herbicide

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

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

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

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

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

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

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

☐ No FIFRA section 24(c) Action

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

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

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

Certification

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

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

Signature of Applicant or Authorized Representative
Pat Dinnen

Title Pat Dinnen
Regulatory Manager

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

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

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

Determination by State Agency

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

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

Title
Pesticides Registrar

Telephone Number 207-287-7544
Date

Comments (by State Agency Only)

Received by EPA

EPA Form 8570-25

Section 24(c) Special Local Need Label

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE

Callisto® Herbicide
For Weed Control in Lowbush Blueberry

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

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

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

Callisto contains 4 lbs of active ingredient mesotrione per gallon.

KEEP OUT OF REACH OF CHILDREN
CAUTION

DIRECTIONS FOR USE

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

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

Specific Use Directions – Lowbush Blueberry – BEARING YEAR

For bearing year application only

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

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

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

Restrictions:

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

Specific Use Directions – Lowbush Blueberry – NON-BEARING YEAR

For Non-bearing year application only

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

Restrictions:

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

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

Label Code: ME1131021AA0417

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

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

Tel. 336 632 2494
Fax: 336 632 2884
pat.dinnen@syngenta.com

April 25, 2017

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

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

Dear Ms. Tomlinson:

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

Enclosed in support of this submission are:

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

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

Sincerely,

Pat Dinnen

Pat Dinnen
Regulatory Manager

Enclosures

Wild Blueberry Office Deering Hall University of Maine, Orono 04469

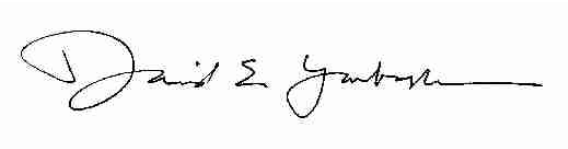
March 10, 2017

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

Dear Mary:

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

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



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

CC: Jeff Zelna, Syngenta

WEED MANAGEMENT

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

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

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

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

RESULTS:

All treatment comparisons

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

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

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

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

T-tests

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

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

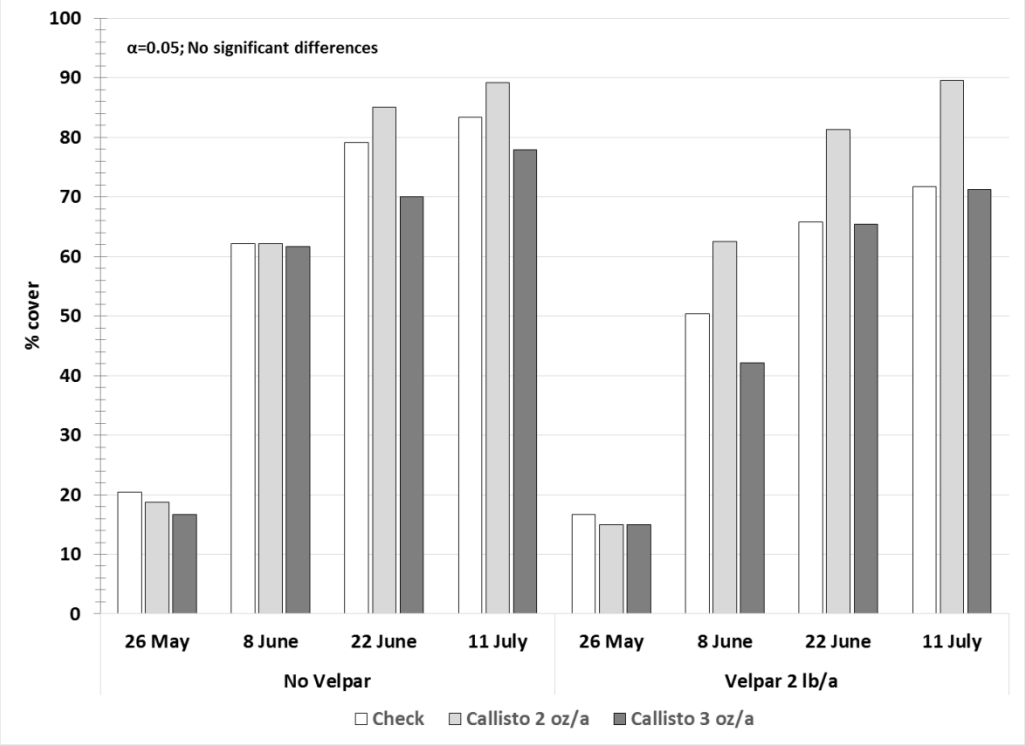


Figure 2. Wild blueberry phytotoxicity following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).

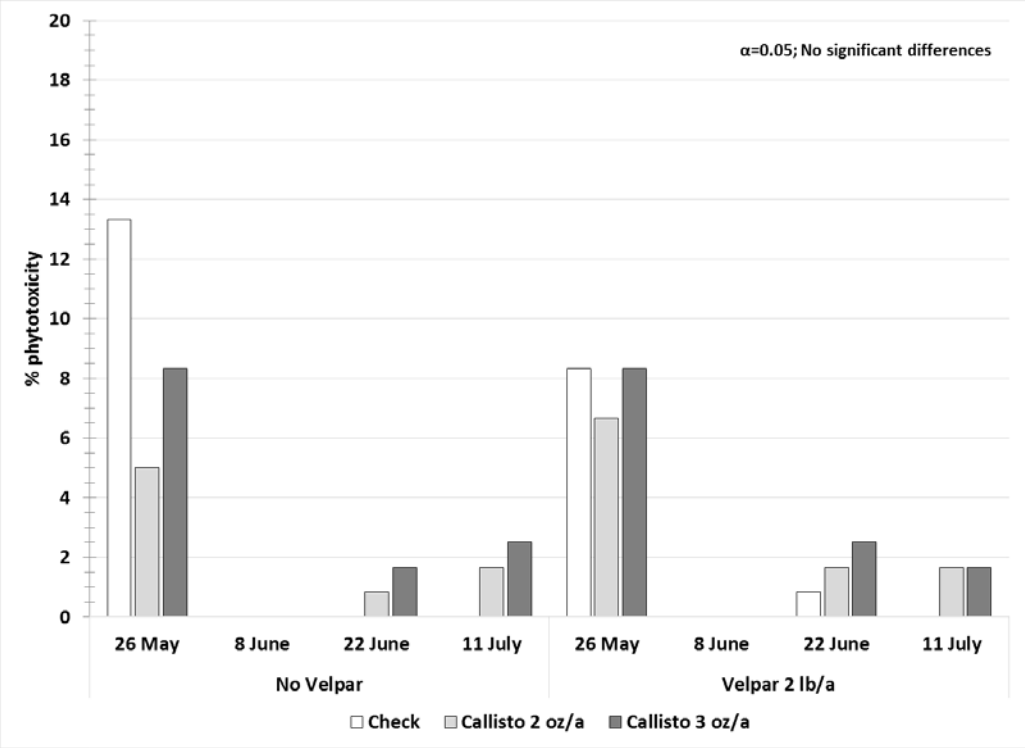


Figure 3. Dogbane cover following pre-emergence application of Velpar and post-emergence applications of Callisto (letters denote significant results only, at α=0.05).

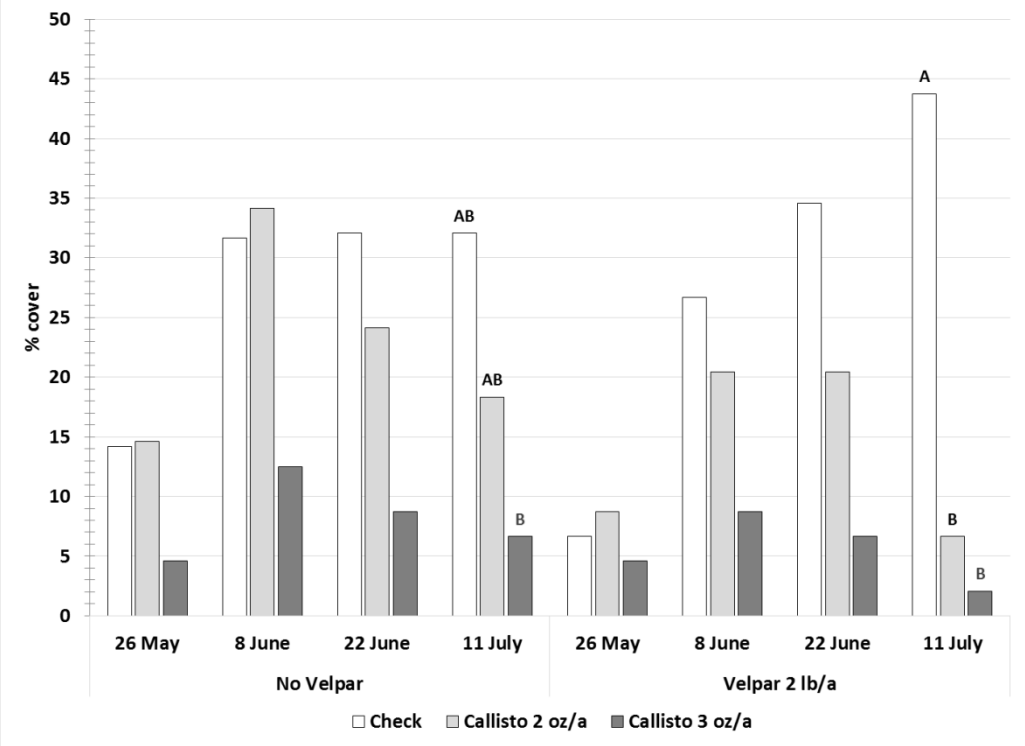


Figure 4. Dogbane phytotoxicity following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05).

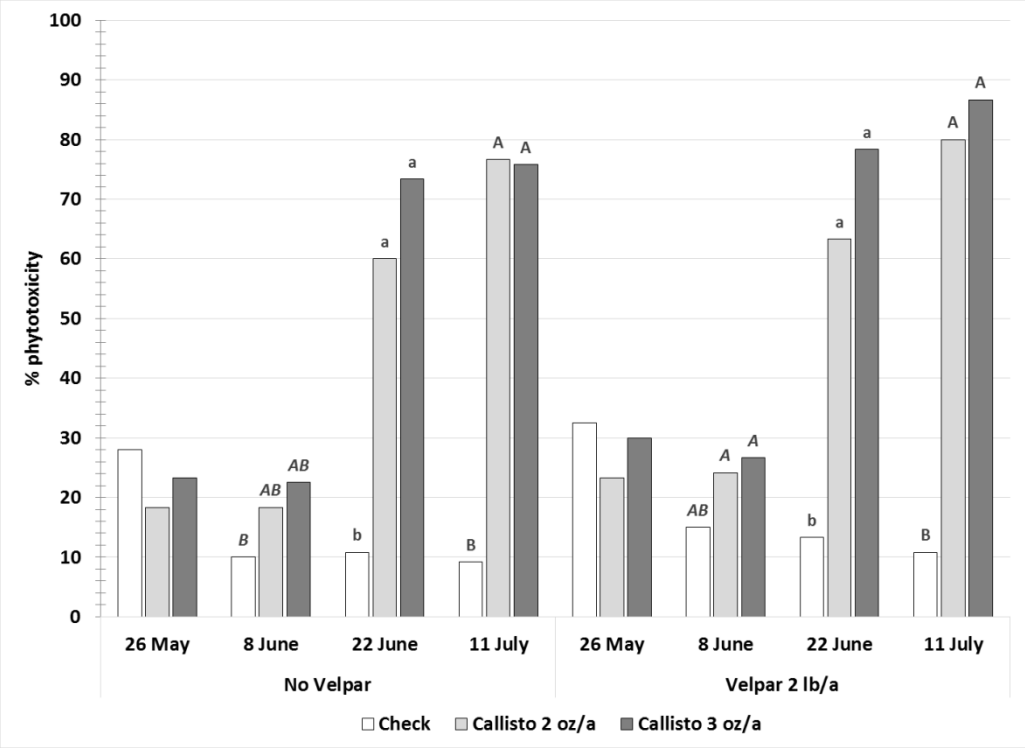


Figure 5. Broadleaf weed cover following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).

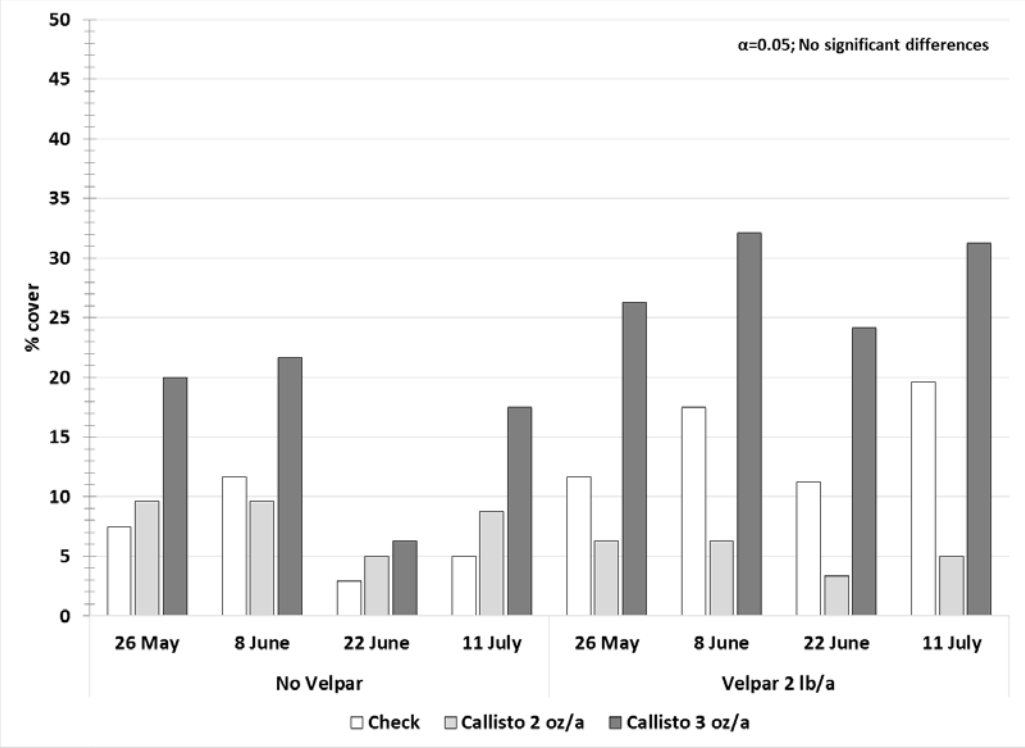
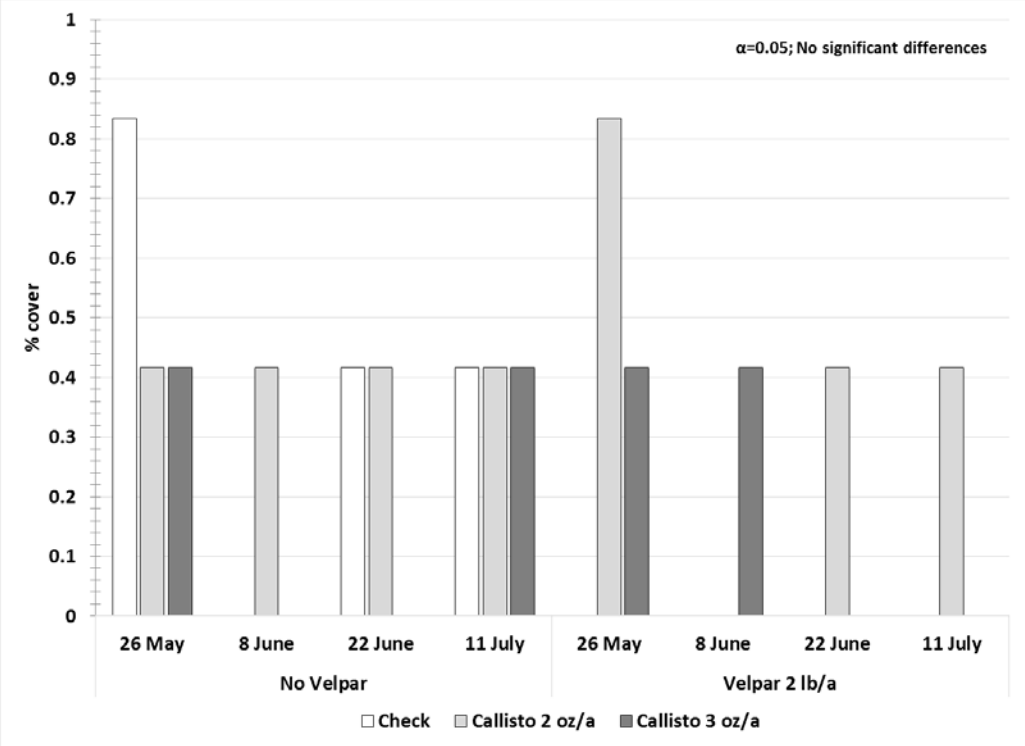


Figure 6. Grass cover following pre-emergence application of Velpar and post-emergence applications of Callisto (α=0.05, no significant differences).



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

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

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

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

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

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

GROUP 27 HERBICIDE

PULL HERE TO OPEN

Callisto® Herbicide

syngenta®

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

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

Contains 4 lb of active ingredient mesotrione per gallon.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

Callisto Plant Technology®

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

Product of Switzerland
Formulated in the USA

SCP 1131A-L1P 0515
4054864

1 gallon
Net Contents

™

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

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

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

continued…

PRECAUTIONARY STATEMENTS *(continued)*

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

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

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

Engineering Control Statements

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

User Safety Recommendations

Users should:

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

Environmental Hazards

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

Surface Water Advisory

This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Physical and Chemical Hazards

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

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

AGRICULTURAL USE REQUIREMENTS

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

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

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

- Coveralls
- Shoes plus socks
- Chemical-resistant gloves

PRODUCT INFORMATION

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

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

RESISTANCE MANAGEMENT

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

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

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

INTEGRATED PEST (WEED) MANAGEMENT

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

USE RESTRICTIONS

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

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

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

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

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

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

USE PRECAUTIONS

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

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

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

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

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

SPRAY DRIFT DIRECTIONS

Avoid drift onto adjacent crops and other nontarget areas.

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

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

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

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

Information on Droplet Size

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

Controlling Droplet Size

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

Sensitive Areas

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

ADDITIONAL SPRAY DRIFT DIRECTIONS FOR AERIAL APPLICATIONS

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

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

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

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

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

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

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

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

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

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

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

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

APPLICATION INFORMATION

PREEMERGENCE GROUND APPLICATION

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

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

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

POSTEMERGENCE GROUND APPLICATION

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

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

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

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

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

Aerial Application

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

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

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

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

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

SPRAY ADDITIVES

POSTEMERGENCE ADJUVANTS

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

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

POSTEMERGENCE APPLICATIONS TO FIELD CORN AND SEED CORN

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

POSTEMERGENCE APPLICATIONS TO SWEET CORN AND YELLOW POPCORN

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

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

PREEMERGENCE ADJUVANTS

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

SPRAY EQUIPMENT

Cleaning Equipment After Callisto Application

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

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

MIXING PROCEDURES

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

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

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

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

WEEDS CONTROLLED

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

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

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

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

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

Table 1. Weeds Controlled With Postemergence Applications of Callisto

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

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

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

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

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

C = Control PC = Partial Control NC = Not Controlled

Table 2. Weeds Controlled With Preemergence Applications of Callisto

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

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

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

C = Control PC = Partial Control

ROTATIONAL CROPS

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

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

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

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

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

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

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

CROP USE DIRECTIONS

CORN

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

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

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

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

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

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

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

CALLISTO USED ALONE – POSTEMERGENCE

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

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

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

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

CALLISTO USED ALONE – PREEMERGENCE

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

CALLISTO TANK MIXTURES FOR CORN

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

Burndown Tank Mixtures in Corn

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

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

Preemergence Tank Mixtures in Corn

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

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

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

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

Postemergence Tank Mixtures in Corn

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

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

Table 5. Callisto Tank Mixtures for Postemergence Application in Corn

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

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

continued…

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

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

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

ASPARAGUS

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

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

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

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

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

Restrictions:

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

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

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

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

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

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

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

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

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

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

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

Restrictions:

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

CRANBERRY

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

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

Chemigation – Sprinkler Irrigation Application for Cranberry Only

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

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

Chemigation Use Precautions – Sprinkler Irrigation Application

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

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

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

FLAX

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

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

OATS

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

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

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

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

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

Restrictions:

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

OKRA

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

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

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

Restrictions:

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

PEARL MILLET

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

RHUBARB

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

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

Restrictions:

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

SORGHUM (GRAIN AND SWEET)

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

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

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

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

Preemergence Application Restrictions:

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

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

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

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

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

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

Post-Directed Restrictions:

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

SUGARCANE

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

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

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

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

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

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

Restrictions:

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

STORAGE AND DISPOSAL

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

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

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

Container Handling [Less Than or Equal to 5 Gallons]

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

Container Handling [Greater Than 5 Gallons]

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

Container Handling [Greater Than 5 Gallons]

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

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

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

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

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

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

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

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

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

SCP 1131A-L1P 0515
4054864

GROUP 27 HERBICIDE

Callisto® Herbicide

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

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

Contains 4 lb of active ingredient mesotrione per gallon.

AGRICULTURAL USE REQUIREMENTS

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

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

Callisto Plant Technology®

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

SCP 1131A-L1P 0515 4054864

1 gallon
Net Contents

KEEP OUT OF REACH OF CHILDREN.

CAUTION

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

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

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

STORAGE AND DISPOSAL

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

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

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

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

syngenta®

KEEP OUT OF REACH OF CHILDREN.

CAUTION

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

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

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

Environmental Hazards

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

Surface Water Advisory

This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Physical and Chemical Hazards

Do not use or store near heat or open flame.

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

SCP 1131A-L2J 0515
4054861

(01) 0 07 02941 76824 6

Safety Data Sheet

CALLISTO® Herbicide

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

1. PRODUCT IDENTIFICATION

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

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

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

Hazard Symbols:

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

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

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

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

4. FIRST AID MEASURES

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

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

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

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

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

Most important symptoms/effects:

Not Applicable

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

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

Specific Hazards:

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

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

Special protective equipment and precautions for firefighters:

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

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

7. HANDLING AND STORAGE

Precautions for safe handling:

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

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

Conditions for safe storage, including any incompatibilities:

Not Applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

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

Occupational Exposure Limits:

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

Appropriate engineering controls:

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

Individual protection measures:

Ingestion:

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

Eye Contact:

Where eye contact is likely, use chemical splash goggles.

Skin Contact:

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

Inhalation:

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Beige to tan liquid

Odor: Faint; pleasant

Odor Threshold: Not Available

pH: 2.4 - 2.8 @ 68°F (20°C)

Melting point/freezing point: Not Available

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): > 200°F

Flammable Limits (% in Air): Not Available

Flammability: Can burn in fire, releasing toxic vapors.

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

Vapor Density: Not Available

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

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

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

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

Incompatible materials: None known.

Hazardous Decomposition Products: Not Available

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Not Applicable

Delayed, immediate and chronic effects of exposure: Not Applicable

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

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

Reproductive/Developmental Effects

Mesotrione : Did not show reproductive effects in animal experiments.

Chronic/Subchronic Toxicity Studies

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

Carcinogenicity

Mesotrione : Did not show carcinogenic effects in animal experiments.

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

Other Toxicity Information

None

Toxicity of Other Components

Ethylene Glycol

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

Other ingredients

Not Applicable

Target Organs

Active Ingredients

Mesotrione : Blood, eye, kidney, liver.

Inert Ingredients

Ethylene Glycol: Blood, kidney, CNS

Other ingredients: Not Applicable

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Mesotrione :

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

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

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

Green Algae 72-hour EbC50 4.5 mg/l

Environmental Fate

Mesotrione :

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

13. DISPOSAL CONSIDERATIONS

Disposal:

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

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Not regulated

Comments

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

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

15. REGULATORY INFORMATION

Pesticide Registration:

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

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

EPA Registration Number(s):
100-1131

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard

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

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

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

TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

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

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

Syngenta Hazard Category: B

For non-emergency questions about this product call:

1-800-334-9481

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

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