

100-1131

01-14-2004

129



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

JAN 14 2004

Dan Cambell
Syngenta Crop Protection
P.O. Box 18300
Greensboro, NC 27419-8300

Dear Mr. Cambell:

Subject: Revised Labeling
Callisto Herbicide
EPA Registration No. 100-1131 ✓
Your Submission Dated December 18, 2003

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you:

1. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

a. We note that you have added "Group 27 Herbicide" to the label's front panel and "Callisto should be applied at full label rates to help prevent selection for, or population shifts toward, marginally tolerant weed species and/or species biotypes" on page 14. Either delete these statements or update in accordance to PR Notice 2001-5. A copy is available at the following web site:

http://www.epa.gov/oppmsd1/PR_Notices/pr2001-5.pdf

b. Group 27 "Unknown" appears to be wrong and should be "Group 28 Bleaching inhibition of the enzyme 4-hydroxyphenylpyruvate dioxygenase (HPPD)". The mesotrione fact sheet states:

Mesotrione has herbicidal activity against broadleaf weeds. It's efficacy is the result of the inhibition of the enzyme 4-hydroxyphenylpyruvate dioxygenase (HPPD) enzyme in target plants. Following treatment, in sensitive plants carotenoid biosynthesis is disrupted in the chlorophyll pathway, resulting in a bleaching effect.

c. Add the following recommended language as appropriate:

(Name of product) is a Group (target site of action group number) herbicide. Any weed population may contain or develop plants naturally resistant to (name of product) and other Group (target site of action group number) herbicides. Weed species with acquired resistance to Group (target site of action group number) may eventually dominate the weed population if Group (target site of action group number) herbicides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by (name of product) or other Group (target site of action group number) herbicides.

To delay herbicide resistance consider:

- Avoiding the consecutive use of (name of product) or other target site of action Group (target site of action group number) herbicides that have a similar target site of action, on the same weed species.
- Using tank-mixtures or premixes with herbicides from different target site of action Groups as long as the involved products are all registered for the same use, have different sites of action, and are both effective at the tank mix or prepack rate on the weed(s) of concern.
- Basing herbicide use on a comprehensive IPM program.
- Monitoring treated weed populations for loss of field efficacy.
- Contacting your local extension specialist, certified crop advisors, and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes."

If available to company, consider including:

- For further information or to report suspected resistance, you may contact (company representatives) at toll free number: _____ or at Internet site: _____.

2. Submit one (1) copy of your final printed labeling before you release the product for shipment.

A stamped copy of the labeling is enclosed for your records.

3/29

-3-

If you have any questions concerning this letter, please contact Mr. James Stone at 703-305-7391.

Sincerely yours,

A handwritten signature in black ink, appearing to read "ISI".

Joanne I. Miller
Product Manager (23)
Herbicide Branch
Registration Division (7505C)

Enclosure

4/29

Booklet

Group	27	Herbicide
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Callisto™

Herbicide

A Preemergence and Postemergence Herbicide for Control of Annual Broadleaf Weeds in Field Corn, Production Seed Field Corn, Field Corn Grown for Silage, and Yellow Popcorn

Active Ingredient:

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

Contains 4 lbs. of active ingredient mesotrione per gallon.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg No. 100-1131

EPA Est. 100-NE-001

1 gallon
Net Contents

ACCEPTED
with COMMENTS
In EPA Letter Dated
JAN 14 2004

Under the Federal Insecticide
Fungicide, and Rodenticide Act
as amended for the pesticide
registration number 100-1131

100-1131

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<p>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</p>	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

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

Personal Protective Equipment (PPE)

Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves - Category A (e.g. barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC), or viton)

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

Engineering Control Statements

When handlers use closed systems or enclosed cabin 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 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.

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 should 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, Inc. or Seller. All such risks shall be assumed by Buyer and User, and 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. This warranty does not extend to the use of the product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and Buyer and User assume the risk of any such use. SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall SYNGENTA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **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.

DIRECTIONS FOR USE

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

Callisto should be used only in accordance with recommendations on this label or in separately published Syngenta supplemental labeling recommendations for this product.

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. Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker 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 – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC), or viton)

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 Disposal

Triple rinse or equivalent. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

GENERAL INFORMATION

Callisto is a systemic preemergence and postemergence herbicide for the selective contact and residual control of broadleaf weeds in field corn, production seed field corn, field corn grown for silage, and yellow popcorn. 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, 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, production seed field corn, field corn grown for silage, and yellow popcorn.

WEEDS CONTROLLED**Table 1. Weeds Controlled With Preemergence Applications of Callisto**

Common Name	Scientific Name	6-7.7.0 fl. oz./A When Used Alone or Applied With a Preemergence Grass Herbicide	Controlled by 5.0-6.0 fl. oz./A Used With an Atrazine Premix
Amaranth, palmer	<i>Amaranthus palmeri</i>	C	C
Amaranthus, Powell	<i>Amaranthus powellii</i>	C	C
Amaranth, spiny	<i>Amaranthus spinosus</i>	C	C
Broadleaf signalgrass	<i>Bracharia platyphylla</i>	C ¹	C
Buffalobur	<i>Solanum rostratum</i>	C	C
Carpetweed	<i>Mollugo verticillata</i>	C	C
Chickweed, common	<i>Stellaria media</i>	C	C
Cocklebur, common	<i>Xanthium strumarium</i>	PC	C
Crabgrass, large	<i>Digitaria sanguinalis</i>	C ¹	C
Galinsoga	<i>Galinsoga parviflora</i>	C	C
Jimsonweed	<i>Datura stramonium</i>	C	C
Kochia	<i>Kochia scoparia</i>	PC	C
Lambsquarters, common	<i>Chenopodium album</i>	C	C
Morningglory, entireleaf, ivyleaf	<i>Ipomoea hederacea</i>	PC	C
Morningglory, pitted	<i>Ipomoea lacunosa</i>	PC	C

Nightshade, eastern black	<i>Solanum ptycanthum</i>	C	C
Nightshade, hairy	<i>Solanum sarrachoides</i>	C	C
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C	C
Pigweed, tumble	<i>Amaranthus albus</i>	C	C
Ragweed, common	<i>Ambrosia artemisiifolia</i>	C	C
Ragweed, giant	<i>Ambrosia trifida</i>	PC	C
Smartweed, ladysthumb	<i>Polygonum persicaria</i>	C	C
Smartweed, pale	<i>Polygonum lapathifolium</i>	C	C
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C	C
Sunflower, common	<i>Helianthus annuus</i>	C	C
Velvetleaf	<i>Abutilon theophrasti</i>	C	C
Waterhemp, common	<i>Amaranthus rudis</i>	C	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C	C
C = Control PC = Partial Control C ¹ = Partial Control When Callisto is Applied Alone			

Table 2. Weeds Controlled with Postemergence Applications of Callisto

			3.0 fl. oz./A Plus ½ pt. (0.25 lb. a.i./A) Atrazine 4L/A or Equivalent Plus COC Plus UAN or AMS	3.0 fl. oz./A Plus ½ pt. (0.25 lb. a.i./A) Atrazine 4L/A or Equivalent Plus COC Plus UAN or AMS
Common Name	Scientific Name	Apply to weeds <5 inches tall		Apply to weeds 5-10 inches tall
Amaranth, palmer	<i>Amaranthus palmeri</i>	C	C	C
Amaranthus, Powell	<i>Amaranthus powellii</i>	C	C	C
Amaranth, spiny	<i>Amaranthus spinosus</i>	C	C	C
Atriplex	<i>Chenopodium orach</i>	C	C	C
Broadleaf signalgrass	<i>Bracharia platphylla</i>	C ¹	C ¹	PC
Buckwheat, wild	<i>Polygonum convolvulus</i>	PC	PC	PC
Buffalobur	<i>Solanum rostratum</i>	C	C	C
Burcucumber	<i>Sicyos angulatus</i>	PC	PC	PC
Carpetweed	<i>Mollugo verticillata</i>	C	C	C
Carrot, wild	<i>Daucus carota</i>	C	C	C
Chickweed, common	<i>Stellaria media</i>	C	C	C
Cocklebur, common	<i>Xanthium strumarium</i>	C	C	C
Crabgrass, large	<i>Digitaria sanguinalis</i>	C ¹	C ¹	PC
Dandelion	<i>Taraxacum officinale</i>	NC	PC	PC
Dock, curly	<i>Rumex crispus</i>	PC	PC	PC
Galinsoga	<i>Galinsoga parviflora</i>	C	C	C

Hemp	<i>Cannabis sativa</i>	C	C	C
Horse nettle	<i>Solanum carolinense</i>	C	C	C
Horseweed/Marestail	<i>Conyza canadensis</i>	PC	C	PC
Jimsonweed	<i>Datura stramonium</i>	C	C	C
Knotweed, prostrate	<i>Polygonum aviculare</i>	PC	PC	PC
Kochia	<i>Kochia scoparia</i>	PC ¹	C ²	PC
Lambsquarters, common	<i>Chenopodium album</i>	C	C	C
Mallow, Venice	<i>Hibiscus trionum</i>	NC	C	PC
Morningglory, entireleaf; ivyleaf	<i>Ipomoea hederacea</i>	PC	C	PC
Morningglory, pitted	<i>Ipomoea lacunosa</i>	PC	C	PC
Mustard, wild	<i>Brassica kaber</i>	C	C	C
Nightshade, black	<i>Solanum nigrum</i>	C	C	C
Nightshade, eastern black	<i>Solanum ptycanthum</i>	C	C	C
Nightshade, hairy	<i>Solanum sarrachoides</i>	C	C	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	PC	PC	PC
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C	C	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C	C	C
Pigweed, tumble	<i>Amaranthus albus</i>	C	C	C
Pokeweed, common	<i>Phytolacca americana</i>	PC	PC	PC
Potatoes, volunteer	<i>Solanum spp.</i>	C	C	C
Pusley, Florida	<i>Richardia scabra</i>	C ¹	C ¹	PC

Ragweed, common	<i>Ambrosia artemisiifolia</i>	PC	C	C
Ragweed, giant	<i>Ambrosia trifida</i>	C	C	C
Sesbania, hemp	<i>Sesbania exaltata</i>	C	C	C
Sida, prickly (teaweed)	<i>Sida spinosa</i>	NC	C ¹	PC
Smartweed, ladysthumb	<i>Polygonum persicaria</i>	C	C	C
Smartweed, pale	<i>Polygonum lapathifolium</i>	C	C	C
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C	C	C
Sunflower, common	<i>Helianthus annuus</i>	C	C	C
Thistle, Canada	<i>Cirsium arvense</i>	NC	C	PC
Velvetleaf	<i>Abutilon theophrasti</i>	C	C	C
Waterhemp, common	<i>Amaranthus rudis</i>	C	C	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C	C	C
¹ Apply before weed exceeds 2 inches in height. ² For control add atrazine at 1 pt. (0.5 lb.) per acre. C = Control PC = Partial Control NC = No Control				

ROTATIONAL CROPS

Corn may be replanted immediately. Small grains may be planted 120 days after application. Soybeans, sorghum, cotton, potatoes, sunflowers, canola, tobacco, alfalfa, and sweet corn can be planted back the following season but not less than 10 months after the last Callisto application. Sugar beets, peas, dry beans, snap beans, cucurbits, red clover, and all other rotational crops may be replanted 18 months after application of Callisto. Planting at shorter than recommended intervals may result in injury to the rotational crop.

USE PRECAUTIONS

Callisto can be used preemergence (alone or with listed tank mix herbicides) and/or postemergence (alone or with listed tank mix herbicides) in field corn, production seed field corn, field corn grown for silage, and yellow popcorn. Do not apply to white popcorn, sweet corn, or ornamental (Indian) corn.

Avoid drift onto adjacent crops.

10/29

Severe corn injury may occur if Callisto is applied postemergence to corn crops that were treated with Counter or Lorsban, which may result in corn crop yield loss.

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

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

Do not cultivate corn within 7 days before or after a 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.

Do not apply this product through any type of irrigation system.

Do not apply 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 herbicide.

Callisto may be applied with pyrethroid type insecticides like Warrior®.

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 or ALS inhibiting herbicides are known to exist. However, no known resistance to Callisto exists, and there are no known instances of cross resistance between Callisto (HPPD inhibitor) and other classes of herbicides, or modes of action. Performance of Callisto is not affected by the presence of biotypes resistant to triazines or ALS inhibiting herbicides.

To help prevent the development of resistance to Callisto herbicide, do not apply Callisto after mesotrione containing preemergence herbicides have been applied, i.e. Lumax™ or Camix™. No more than 0.24 lb. of mesotrione active ingredient should be applied per acre 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 should 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.

SPRAY DRIFT

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.

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 should 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).

APPLICATION PROCEDURES

PREEMERGENCE

Ground Spray Equipment

Spray nozzles should be uniformly spaced, the same size and type, and should 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 10-80 gals./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 Spray Equipment

Spray nozzles should be uniformly spaced, the same size and type, and should 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 should be based on the height of the crop – at least 15 inches above the crop canopy.

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

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

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

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

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 gals. 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** section 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 should 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 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. Screens finer than 50-mesh should not be used.
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 Callisto slowly and agitate until completely dispersed. 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.
5. If tank mixing, add the tank mix product next.
6. Finally, add adjuvant and UAN or AMS, if needed, and then continue to fill tank to desired level with water.

CROP USE DIRECTIONS

Callisto may be used preemergence or postemergence on field corn, production seed field corn, field corn grown for silage, and yellow popcorn. 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. Do not apply Callisto to white popcorn, sweet corn, or ornamental (Indian) corn.

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

application of Callisto to yellow popcorn. Do not include nitrogen based adjuvants (UAN or AMS) when making postemergence applications of Callisto to yellow popcorn.

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 season. Do not apply Callisto to ground that has been treated with Lumax or Camix in the same season.. Do not make more than 2 applications of Callisto per season. Do not exceed 3.0 fl. oz. (0.094 lb. a.i./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 harvest forage, grain, or stover within 45 days after application.

FIELD CORN, PRODUCTION SEED FIELD CORN, FIELD CORN GROWN FOR SILAGE, AND YELLOW POPCORN

Callisto Used Alone – Preemergence Rates

Apply Callisto alone at 6.0-7.7 fl. oz./A (0.188-0.24 lb. a.i./A) by ground sprayers in a spray volume of 10-30 gals. of water (up to 80 gals. if applied with liquid fertilizers) per acre for broadleaf weed control. For a list of weeds controlled, refer to Table 1. Callisto may be tank mixed with preemergence grass herbicides for grass control. Refer to the tank mix section for a list of partners.

Callisto Used Alone – Postemergence Rates

Apply Callisto at 3.0 fl. oz./A per application. For postemergence applications of Callisto, add crop oil concentrate (COC) to the spray solution at a rate of 1.0 gal./100 gals. of water (1.0% v/v). **Do not use Methylated Seed Oil (MSO) or MSO blend adjuvants.**

In field corn, always add spray grade UAN (28-0-0) to the spray solution at a rate of 2.5% (v/v) or AMS at 8.5 lbs./100 gals. spray solution (except when applying to yellow popcorn or per specific tank mix instructions on this label). For best results, apply Callisto to actively growing weeds. For a list of weeds controlled see Table 2. 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.

In yellow popcorn, crop oil concentrate (COC) may be used as described above, however, UAN or AMS should not be used, or severe crop injury may occur. Because the adjuvant benefits of UAN or AMS are not available in yellow popcorn, weeds less than 5 inches should be targeted, and the addition of atrazine is recommended wherever rotational or

local atrazine restrictions will allow, in order to achieve the level of weed control that is listed for Callisto plus COC plus UAN or AMS (first column) in Table 2.

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 season. Do not exceed a total of 7.7 fl. oz./A (0.24 lb. a.i./A) of Callisto per season.
- 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. a.i./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. a.i./A) for the two postemergence applications.
- Do not apply Callisto to ground that has already been treated with Lumax or Camix in the same season.
- 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 COMBINATIONS – PREEMERGENCE

Tank Mixed with Axiom®, Degree™, Doubleplay®, Dual II MAGNUM®, Dual MAGNUM®, Frontier®, Harness®, Outlook™, Surpass® EC, Prowl®, or Topnotch® – Preemergence

Callisto at a rate of 6.0-7.7 fl. oz./A (see Table 1) can be tank mixed with Axiom, Degree, Doubleplay, Dual II MAGNUM, Dual MAGNUM, Frontier, Harness, Outlook, Surpass EC, Prowl, or Topnotch. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Tank Mixed with AAtrex®, Bicep II MAGNUM®, Bicep Lite II MAGNUM®, Degree Xtra™, Guardsman®, Guardsman Max®, Fultime™, Harness Xtra®, or LeadOff™ – Preemergence

Callisto at a rate of 5.0-6.0 fl. oz./A (see Table 1) can be tank mixed with AAtrex, , Bicep II MAGNUM, Bicep Lite II Magnum, Degree Xtra, Guardsman, Guardsman Max, Fultime, Harness Xtra, or LeadOff. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Used in Combination with Preemergence Burndown Herbicides: Tank Mixed with Expert™ Gramoxone Max, Roundup Brands, Touchdown® Brands, and/or 2,4-D – Preemergence

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 by ground sprayers in tank mixes with Gramoxone Max, Roundup brands, Touchdown brands, and/or 2,4-D. For greater residual control, use 6.0-7.7 oz./A of Callisto (see Table 1) 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.

CALLISTO COMBINATIONS – POSTEMERGENCE

Application of Callisto at rates less than 0.094 lb. a.i./A (3.0 fl. oz.) postemergence may result in incomplete weed control and loss of residual control. Syngenta advises against the use of rates less than 0.094 lbs. a.i./A (3.0 fl. oz.) postemergence with all tank mix partners.

Tank Mixed with AAtrex 4L or AAtrex Nine-O - Postemergence (see Table 2)

In these tank mixes, apply Callisto at 3.0 fl. oz./A. If weeds are more than 5 inches tall, or for improved control of common ragweed, Florida pusley, kochia, large crabgrass, morningglory spp., palmer amaranth, prickly sida, prostrate knotweed, Venice mallow, and wild buckwheat, or for faster weed control, add AAtrex 4L or AAtrex Nine-O at a minimum rate of 0.5-1.0 pt./A (or equivalent rate of other formulations of atrazine). **Do not use any atrazine formulation if corn is greater than 12 inches tall.**

For best results, apply Callisto to actively growing weeds. Susceptible weeds which emerge soon after application may be controlled after they absorb the herbicide from the soil. Callisto will not control most grass weeds. For postemergence applications, add crop oil concentrate (COC) to the spray solution at a rate of 1.0 gal./100 gals. of water (1% v/v). Always add spray grade UAN (28-0-0) at a rate of 2.5% (v/v) or AMS (8.5 lbs./100 gals. spray solution) to the spray solution (except when applying to yellow popcorn or per specific tank mix instructions on this label). **Do not use Methylated Seed Oil (MSO) or MSO blend adjuvants.** Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

24/29

Tank Mixed with Liberty® and Liberty® ATZ – Postemergence

Callisto at a rate of 3.0 fl. oz./A (see Table 2) can be tank mixed with Liberty or Liberty ATZ. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Use tank mixes with Liberty only on seed designated as LibertyLink® or warranted by Bayer CropScience as being tolerant to Liberty herbicide. Failure to follow these directions will lead to severe crop injury. Follow all other directions for use, including adjuvants, as specified on the Liberty product label. However, do not use crop oil concentrate (COC) as an adjuvant when tank mixing Callisto with Liberty or Liberty ATZ.

Tank Mixed with Basagran® – Postemergence

Callisto at a rate of 3.0 fl. oz./A (see Table 2) can be tank mixed with Basagran. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Tank Mixed with Accent®, Basis®, Steadfast®, or Steadfast ATZ® – Postemergence

Callisto at a rate of 3.0 fl. oz./A can be tank mixed with Accent, Basis, Steadfast, or Steadfast ATZ. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Tank Mixed with Buctril® (2 lb./gallon) – Postemergence

To aid in the control of certain broadleaf weeds (e.g. ragweeds), Callisto at a rate of 3.0 fl. oz./A can be tank mixed with Buctril at a rate up to 6 fl. oz./A. Buctril can be used in place of atrazine in corn that is greater than 12 inches tall, which is the corn height limit for the use of atrazine. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Tank Mixed with Dual MAGNUM or Dual II MAGNUM – Postemergence

Callisto at a rate of 3.0 fl. oz./A can be tank mixed with Dual MAGNUM or Dual II MAGNUM, but special attention must be paid to adjuvant selection and/or application method. As EC formulations, Dual MAGNUM and Dual II MAGNUM can act like an adjuvant in certain combinations and thus increase the risk of crop injury. If either of these tank mixtures are used, the user should either leave the crop oil concentrate (COC) out of the adjuvant mix or apply as a post-directed spray to minimize contact with crop foliage. In either case, the control of emerged weeds may be reduced somewhat due to less than optimum adjuvant effect or weed coverage and there is still a risk of temporary crop injury in the form of leaf burn with these mixtures. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Tank Mixed with Bicep II MAGNUM or Bicep Lite II MAGNUM – Postemergence

Callisto at a rate of 3.0 fl. oz./A can be tank mixed with Bicep II MAGNUM or Bicep Lite II MAGNUM, but special attention must be paid to adjuvant selection and/or application method. If either of these tank mixtures are used, the user should either leave the nitrogen based adjuvant (UAN or AMS) out of the mix or apply as a post-directed spray to minimize contact with crop foliage. There is still a risk of temporary crop injury in the form of leaf burn with these mixtures. 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. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled. Do not apply either of these tank mixtures to corn greater than 12 inches tall.

This product is protected by U.S. Patent Nos. 5,006,158 and 5,698,493. Other patents pending. No license granted to prepare any tank mixtures other than those expressly provided herein.

AAtrex®, Bicep II Magnum®, Bicep Lite II Magnum®, Callisto™, Camix™, Doubleplay®, Dual II Magnum®, Dual Magnum®, Expert™, Gramoxone®, Lumax™, Touchdown®, Warrior® and the Syngenta logo trademarks of a Syngenta Group Company.

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Axiom™, Liberty®, Liberty® ATZ, and LibertyLink® trademarks of Bayer CropScience.

Basagran®, Counter®, Frontier®, Guardsman®, Guardsman Max®, Outlook™, and Prowl® trademarks of BASF Corporation.

Degree™, Degree Xtra™, Harness®, Harness Xtra®, Roundup Ultra™, and Roundup UltraMax™ trademarks of Monsanto Company.

Fultime®, Lorsban®, Surpass®, and Topnotch® trademarks of Dow AgroSciences.

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

Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com

Base Label
(1 gallon)

Group	27	Herbicide
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Callisto™

Herbicide

A Preemergence and Postemergence Herbicide for Control of Annual Broadleaf Weeds in Field Corn, Production Seed Field Corn, Field Corn Grown for Silage, and Yellow Popcorn

Active Ingredient:

Mesotrione: (CAS No. 104206-82-8).....	40.0%
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Other Ingredients:	60.0%
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Total:	100.0%
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Contains 4 lbs. of active ingredient mesotrione per gallon.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

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

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.

Container Disposal

Triple rinse or equivalent. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

EPA Reg No. 100-1131

EPA Est. 100-NE-001

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28/29

Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com

1 gallon
Net Contents

Precautionary Statement 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.

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<p>HOTLINE NUMBER</p> <p>For 24-Hour Medical Emergency Assistance (Human or Animal), or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call 1-800-888-8372</p>	

29/29

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.