Product Name: CALLISTO Herbicide
APVMA Approval No: 87588/135968

Label Name:	CALLISTO Herbicide

Signal Headings:	POISON KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Constituent Statements:	ACTIVE CONSTITUENT: 480 g/L MESOTRIONE ALSO CONTAINS: 166 g/L ETHYLENE GLYCOL

Mode of Action:	GROUP 27 HERBICIDE

Statement of Claims:	For the control of a range of broadleaf weeds in Wheat, Barley, Oats, and Triticale

Net Contents:	5 to 100 L

Restraints:	This section contains file attachment.

Directions for Use:	This section contains file attachment.

Other Limitations:	

Withholding Periods:	WITHHOLDING PERIODS

	Grazing: DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 10 WEEKS AFTER APPLICATION Harvest: NOT REQUIRED WHEN USED AS DIRECTED

Trade Advice:	

General Instructions:	CALLISTO Herbicide is a soil applied, residual herbicide that controls a wide range of broad leaved weeds. For pre-emergent application, the product should be applied prior to the sowing of wheat, barley, triticale or oats and incorporated by the sowing action only. Incorporation must occur within 3 days of application. For split application, the product should be applied initially prior to the sowing of wheat, barley, triticale or oats and incorporated by the sowing action. Incorporation must occur within 3 days of application. The second or follow up application should be made post-planting as soon after sowing as possible and before the crop and weeds emerge. The herbicide is absorbed through the roots of the target weeds and affected plants will turn white or pale yellow before finally being controlled. The active ingredient is slightly soluble in nature and may, depending on soil texture, soil organic matter and rainfall patterns, redistribute through the soil profile. However, to maximise efficacy, attention should be paid to incorporation at the time of seeding to ensure that the herbicide treated soil is distributed evenly, with soil clods minimised. With IBS applications, knife point and press wheel seeding systems it is can be expected in some situations to see weed escapes in the seeding furrow as the seeding system removes the herbicide from the furrow. As a result, an early post emergent application may be required to control escapes. Incorporation and tillage CALLISTO can only be used in knife point and press wheel seeding systems. Other seeding systems provide insufficient seed herbicide separation potentially resulting in reduced crop safety. Wide, conventional or sweep points will also substantially reduce the efficacy achieved with CALLISTO due to dilution of the herbicide through the surface soil layer. Likewise, the use of harrows of any type following the seeding operation will also dramatically reduce weed control. Tillage at any point between the harvest of the prior crop and the planting of the cereal crop treated with CALLISTO is likely to result in reduced efficacy. Crop Safety Crop selectivity is achieved through separation of the seed from the herbicide band. Planting equipment should be set up to ensure adequate physical separation is achieved between seed and the herbicide band. A minimum planting depth of 2.5cm is recommended to assist in achieving the required separation. When applying CALLISTO Herbicide consider the following: • CALLISTO can only be used in knife point and press wheel (KPPW) seeding systems • Durum wheat is more sensitive to CALLISTO than bread wheat. Should sufficient physical separation between the crop and the herbicide not be achieved and maintained, significant and permanent crop injury may occur. • Avoid shallow planting, particularly in lighter soil types or ameliorated soils. • Avoid situations which result in concentration of the herbicide in the planting row (for example wind, rolling, rain washing product into the furrow, furrow wall collapse). • Avoid soil throw into adjacent seeding rows or sites where furrow walls may collapse. • Avoid conditions which result in poor crop root development such as waterlogging, which may lead to an increase in crop damage. • Applications in combination with other Group 27 herbicides (HPPD inhibitors) or other bleaching herbicides may result in increased crop damage. • Areas of double overlap (such as headlands) may result in increased crop effect. • Heavy rainfall following sowing may increase the likelihood of crop damage.

• Crop leaf bleaching can occur late in the season when lateral root growth occurs out into the herbicide band.
• Subsoil constraints can lead to increased leaf bleaching (rock or limestone, compaction, hostile subsoils etc).

Mixing
The recommended rate of CALLISTO Herbicide should be added to the spray tank after granular tank-mix partners (if used) are fully dissolved and in suspension. Good agitation should take place to ensure adequate mixing.

Adjuvants
An adjuvant is not required for the use of CALLISTO Herbicide.

Water Rate
A water volume of 50 L/ha or higher is required for the use of CALLISTO Herbicide.

Compatibility
Physical compatibility has been assessed for a range of products and, providing the correct mixing order is followed and accompanied with strong agitation of the spray solution, compatibility will be acceptable. Refer to your local Syngenta representative for the most up to date information relating to the compatibility and crop safety of herbicide tank mixtures or visit our website at www.syngenta.com.au.
As formulations of other manufacturer's products are beyond the control of Syngenta, and the quality of water may vary with location, all mixtures should be tested prior to mixing commercial quantities.

The spray mix must not be left standing in the case of equipment failure, particularly for those containing DUAL GOLD.

Clean Up
The sprayer must be thoroughly decontaminated before being used for pre-emergent applications in any crops other than wheat, barley, oats and triticale or post-emergence applications in any crops.
Incomplete decontamination may lead to speckling/bleaching in non-target crops.
Thoroughly clean the sprayer using the following procedure when you have finished spraying.
1. Drain the sprayer completely and wash out the tank, boom, boom ends and all hoses (paying attention to/including dead spots in the spray lines/end boom areas in the spray lines) for several minutes with clean water containing a household detergent.
2. Fill the sprayer tank with clean water and add either:
• One litre of household ammonia (containing 3% ammonia) per 100 litres of water,
• Chlorine: 100 to 300 mL fresh household chlorine bleach (containing 4% chlorine) per 100 litres of water, OR
• All Clear* DS at label rates.
Allow the solution to agitate for 15 to 30 minutes prior to flushing the solution through the boom and nozzles. Drain the system.
3. Remove the nozzles and screens and wash separately in a bucket containing the decontamination solution (either ammonia, chlorine or All Clear* DS).
4. Thoroughly rinse the tank, hoses, booms, nozzles and screens with clean water for a minimum of 5 minutes to remove all traces of the decontamination solution. Drain the sprayer completely ensuring sprayer hoses, boom and end boom areas/dead spots in the spray lines/boom are fully drained/purged of rinse water.
Mix only as much spray solution as needed. Immediately after spraying, clean equipment thoroughly using this procedure. Wear appropriate protective clothing.

Re-cropping Intervals
The following crop and pasture species can be sown 9 months after the use of CALLISTO as long as 250 mm of rain has fallen between application and the proposed sowing date: Wheat, Barley, Oats Triticale, Canola, Chickpeas, Faba Beans, Field Peas, Medic, Lentils, Lucerne, Lupins, Sub Clover, Vetch

	In some instances, reduced biomass or vigour may be noted in Sub Clover. However, the effect will be minor and is unlikely to cause significant reductions in pasture biomass. This product is broken down in the soil by microbes in warm, moist, aerobic soil conditions. Under conditions which DO NOT favour breakdown, such as soils low in organic matter, non-wetting sands, anaerobic situations such as waterlogging and prolonged dry periods, soil residues will persist longer than outlined and may affect follow crops. In these instances, it is recommended to plant a less susceptible follow crop. Areas that receive double rates, such as boom overlaps, may exhibit increased crop effect. Generally, this is a bleaching or yellowing of the crop and is expected to be transient but may be accompanied by a crop biomass reduction.

Resistance Warning:	Resistant Weeds Warning - GROUP 27 HERBICIDE CALLISTO Herbicide is a member of the triketone group of herbicides. CALLISTO has the inhibitors of 4-hydroxyphenyl-pyruvate dioxygenase (HPPD) mode of action. For weed resistance management, CALLISTO is a Group 27 herbicide. Some naturally occurring weed biotypes resistant to CALLISTO and other Group 27 herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by CALLISTO or other Group 27 herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, Syngenta Australia Pty Ltd accepts no liability for any losses that may result from the failure of CALLISTO to control resistant weeds.

Precautions:	

Protections:	PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT Very toxic to aquatic life. DO NOT contaminate wetlands or watercourses with this product or used containers.

Storage and Disposal:	Store in the closed, original container in a cool, well ventilated area. DO NOT store for prolonged periods in direct sunlight. Non-refillable containers: Triple rinse containers before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. DO NOT burn empty containers or product. Refillable containers: Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

Safety Directions:	May irritate the eyes and skin. Avoid contact with eyes and skin. Wash hands after use.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone 131 126.

First Aid Warnings:	

Restraints:
DO NOT apply with aircraft
DO NOT apply by a vertical sprayer
DO NOT apply if heavy rains or storms are forecast within 3 days
DO NOT irrigate to the point of runoff for at least 3 days after application
DO NOT apply unless incorporation by sowing (IBS) can occur within 3 days
DO NOT apply more than 200 mL/ha per crop

Spray Drift Restraints:
Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift.

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the relevant buffer zone table below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

DO NOT apply by a boom sprayer unless the following requirements are met:
- Spray droplets are not smaller than a MEDIUM spray droplet size category.
- Minimum distances between the application site and downwind sensitive areas are observed (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for boom sprayers').

Buffer zones for boom sprayers

Application Rate	Boom Height Above the Target Canopy	Mandatory Downwind Buffer Zones				
		Bystander Areas	Natural Aquatic Areas	Pollinator Areas	Vegetation Areas	Livestock Areas
Up to 200 mL/ha	0.5 m or lower	Not required	70 metres	Not required	95 metres	Not required
	1.0 m or lower	Not required	200 metres	Not required	325 metres	Not required
100 mL/ha or lower	0.5 m or lower	Not required	40 metres	Not required	50 metres	Not required
	1.0 m or lower	Not required	110 metres	Not required	140 metres	Not required

DIRECTIONS FOR USE

Crop	Weeds	Rate	Critical Comments
Wheat, Barley, Oats, Triticale	**Suppression of** Double Gee / Spiny Emex, Volunteer Canola	100 to 150 mL/ha	Apply prior to sowing and incorporate mechanically by sowing operation (IBS). Incorporation must occur within 3 days of application. Use the higher rate when higher weed pressure is expected, or longer residual activity is required. Lower rates are recommended in lighter soils. On sandy soils and especially where furrow wall collapse occurs, higher use rates may result in transient bleaching of newly emerged leaves, lasting around 2 weeks. Affected leaves will typically have a normal green colour restored after this time. To reduce the risk of adverse crop effects, refer to Crop Safety in GENERAL INSTRUCTIONS. Cultivation must not occur prior to the use of CALLISTO® from the previous crop until the sowing of the current crop. Wide points and harrows of any type must not be used at or after the seeding operation that incorporates CALLISTO®. Avoid soil throw into adjacent seeding rows or sites where furrow walls may collapse. Weed control may be adversely affected by: • Insufficient rainfall within 7 to 10 days after application • Germinated and emerged weeds that are not controlled by a knockdown herbicide • Application to ridged or cloddy soil • Uneven application • Heavy stubble or ground cover (particularly where this exceeds 50%). When combined these factors may substantially reduce weed control.
	Control of Capeweed, Cleavers / Bedstraw, Fleabane, Indian Hedge Mustard, Lesser Loosestrife, Prickly Lettuce, Serradella, Shepherd's Purse, Sow Thistle / Milk Thistle, Sub Clover, Volunteer Chickpeas, Volunteer Faba Beans, Volunteer Field Peas, Volunteer Lentils, Volunteer Vetch, Wild Radish, Wild Turnip **Suppression of** Ball Medic, Patterson's Curse, Red Flowered Mallow, Rough Poppy, Wireweed, Volunteer Lupins	100 to 200 mL/ha	
	Control of Double Gee / Spiny Emex, Volunteer Canola **Suppression of** Chickweed, Fumitory, Jersey Cudweed	200 mL/ha	

Crop	Weeds	Rate	Critical Comments
Wheat, Barley, Oats, Triticale	**Control of** Capeweed, Cleavers / Bedstraw, Double Gee / Spiny Emex, Fleabane, Indian Hedge Mustard, Lesser Loosestrife, Prickly Lettuce, Serradella, Shepherd's Purse, Sow Thistle / Milk Thistle, Sub Clover, Volunteer Canola, Volunteer Chickpeas, Volunteer Faba Beans, Volunteer Field Peas, Volunteer Lentils, Volunteer Vetch, Wild Radish, Wild Turnip **Suppression of** Ball Medic, Chickweed, Fumitory, Jersey Cudweed, Patterson's Curse, Red Flowered Mallow, Rough Poppy, Volunteer Lupins, Wireweed	**Split application:** 130 mL/ha pre-plant followed by 70 mL/ha post plant, pre-emergent	Apply prior to sowing and incorporate mechanically by the sowing operation (IBS). Incorporation must occur within 3 days of application. Follow with the post-plant application as soon after sowing as possible, but before the crop and weeds emerge. DO NOT apply more than 200 mL/ha per crop. On sandy soils and especially where furrow wall collapse occurs, higher use rates will result in transient bleaching of newly emerged leaves, lasting around 2 weeks. Affected leaves will typically have a normal green colour restored after this time. To reduce the risk of adverse crop effects, refer to Crop Safety in GENERAL INSTRUCTIONS. Cultivation must not occur prior to the use of CALLISTO® from the previous crop until the sowing of the current crop. Wide points and harrows of any type must not be used at or after the seeding operation that incorporates CALLISTO®. Avoid soil throw into adjacent seeding rows or sites where furrow walls may collapse. Weed control may be adversely affected by: • Insufficient rainfall within 7 to 10 days after application • Germinated and emerged weeds that are not controlled by a knockdown herbicide • Application to ridged or cloddy soil • Uneven application • Heavy stubble or ground cover (particularly where this exceeds 50%). When combined these factors may substantially reduce weed control.