

66222-168

9/25/2008

1/18



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

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Christie Hitchcock  
Regulatory Specialist  
Makhteshim Agan of North America, Inc.  
4515 Falls of Neuse Rd., Suite 300  
Raleigh, NC 27609

SEP 25 2008

Subject: Notification(s) for Label Revisions under PRN 2007-4, PRN 98-10 and PRN 2007-1

1. Added "Manufactured for" in front of the company name
2. Added voluntary marketing statement about use of an adjuvant
3. Updated warranty statement
4. Added Emergency responder phone numbers
5. Updated address of product specific labeling

Dear Ms. Hitchcock:

The Agency is in receipt of your Application(s) for Pesticide Notification under Pesticide Registration Notices (PRN) 2007-4, 98-10 and 2007-1 dated August 19, 2008 for:

**EPA Registration 66222-168      Ecomazapyr2SL**

The Registration Division (RD) has conducted a review of the request(s) for applicability under 2007-4, 98-10 and 2007-1 and finds that the label changes requested fall within the scope of 2007-4, 98-10 and 2007-1. The label has been date-stamped "Notification" and will be placed in our records.

Please be reminded that 40 CFR Part 156.140(a)(4) requires that a batch code, lot number, or other code identify the batch of the pesticide distributed and sold be placed on nonrefillable containers. The code may appear either on the label (and can be added by non-notification/PR Notice 98-10) or durably marked on the container itself.

If you have any questions, please contact me directly at 703-305-6249 or Nicole Williams of my staff at 703-308-5551.

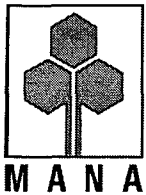
Sincerely,



Linda Arrington  
Notifications & Minor Formulations Team Leader  
Registration Division (7505P)  
Office of Pesticide Programs



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August 19, 2000

Document Processing Desk (NOTIF)  
Registration Division (7504P)  
OPP, USEPA  
Ariel Rios Building  
1200 Pennsylvania Ave, NW  
Washington DC 20460

Re: Ecomazapyr 2SL; EPA Reg. No. 66222-168  
Notification per PRN 98-10 and 2007-4

To Whom It May Concern:

2006-01

We are notifying the Agency of several label updates as allowed in PR Notices 98-10 and 2007-4. The changes are summarized below:

- ✓ Added "Manufactured for" in front of the company name (allowed per PRN 98-10 §II(N)(2)) *Other Revisions*
- ✓ Added a voluntary marketing statement about use of an adjuvant (allowed per PRN 98-10, §II(N)(3))
- ✓ Updated the Warranty Statement that is now consistent with EPA's guidance document dated 10-17-06) (allowed per PRN 98-10 §II(J))
- ✓ Added Emergency Responder phone numbers in First Aid and/or Storage & Disposal sections (allowed per PRN 2006-01 §II(E))
- ✓ Updated address on product-specific labeling (allowed per PRN 98-10 §IV(D))(note; official EPA records have already been updated; we're just correcting this label)
- Updated container disposal instructions per PRN 2007-4

In support of this submission, the following documents are attached:

- Application for Pesticide Registration (EPA Form 8570-1)
- One copy of final printed labeling

Please contact me at 919-256-9342 or by email at [chitchcock@manainc.com](mailto:chitchcock@manainc.com) if you have any questions regarding this submission or would like a copy of the annotated label showing the changes for your files.

Sincerely,

Christie Hitchcock  
Regulatory Specialist

Enclosures

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"Notification of label change relative to PR Notice 2007-1. This notification is consistent with the guidance in PR Notice 2007-1 and the requirements of EPA's regulations at 40 CFR 156.10 and 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the guidance of PR Notice 2007-1 and the requirements of 40 CFR 156.10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA."

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# Ecomazapyr 2SL

Ecomazapyr 2SL may ONLY be used for application to control undesirable emergent and floating aquatic vegetation in and around standing and flowing water, including estuarine and marine sites. Ecomazapyr 2SL may also be used to control undesirable vegetation growing in or around surface water in wetland, riparian and terrestrial habitats where applications may inadvertently contact surface water. Ecomazapyr 2SL may also be used for cut stump, cut stem and frill and girdle treatments within aquatic sites.

<b>ACTIVE INGREDIENT:</b>	<b>% BY WT.</b>
Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)* .....	27.8%
<b>INERT INGREDIENTS:</b> .....	<u>72.2%</u>
<b>TOTAL:</b>	100.0%

\*Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid equivalent per gallon.

## KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCIÓN

**PRECAUCION AL USUARIO:** Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Manufactured for:  
Makhteshim Agan of North America, Inc.  
4515 Falls of Neuse Rd., Suite 300  
Raleigh, NC 27609

EPA Reg. No. 66222-168

EPA Est. No. \_\_\_\_\_

**NET CONTENTS: \_\_\_\_\_ GALLONS**

### FIRST AID

<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor for further treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to by a poison control center or doctor.</li> <li>• Do not give anything to an unconscious person.</li> </ul>
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>

### HOTLINE NUMBER

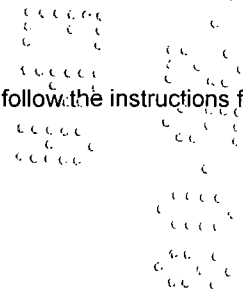
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact PROSAR 1-800-308-5391 for emergency medical treatment information.

### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION!** Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing and wash before reuse.

### 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.



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**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

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

**ENVIRONMENTAL HAZARDS**

Do not apply to water except as specified in this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss may cause the suffocation of some aquatic organisms. Do not contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to vascular plants and should be used strictly in accordance with the drift precautions on the label.

**PHYSICAL AND CHEMICAL HAZARDS**

Spray solutions of Ecomazapyr 2SL should be mixed, stored and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

Do not mix, store or apply Ecomazapyr 2SL or spray solutions of Ecomazapyr 2SL in unlined steel (except stainless steel) containers or spray tanks.

**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.

Keep containers closed to avoid spills and contamination.

**GENERAL INFORMATION**

Ecomazapyr 2SL is an aqueous solution intended to be mixed with water and surfactant(s) for application to control floating and emergent undesirable vegetation (see **AQUATIC WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section and the **ADDITIONAL WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section) in or near bodies of water which may be flowing, non-flowing or transient. Ecomazapyr 2SL may be applied to aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites and seasonal wet areas. See **AQUATIC USES, PRECAUTIONS AND RESTRICTIONS** section of this label for precautions, restrictions, and instructions on aquatic uses. Ecomazapyr 2SL may also be used for cut stump, cut stem and frill and girdle treatments within aquatic sites (see **AERIAL APPLICATIONS AND GROUND APPLICATIONS** sections for additional details).

Read and observe the following directions if aquatic sites are present in terrestrial non-crop areas and are part of the intended treatment area:

Ecomazapyr 2SL controls most annual and perennial grasses, broadleaf weeds and many brush and vine species. Ecomazapyr 2SL will provide some residual control of undesirable species that germinate above the waterline. Ecomazapyr 2SL controls vegetation by absorption through emergent leaves and stems, from which it is translocated throughout the plant, where it accumulates in rapidly-growing meristematic tissue. Treated plants stop growing soon after treatment. Chlorosis (yellowing of plant tissue) first appears in the newest leaves, and necrosis spreads from this point. In perennials, Ecomazapyr 2SL is translocated into and kills underground or submerged storage organs to prevent regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until two or more weeks after application. Complete kill of plants may not occur for several weeks. Applications of Ecomazapyr 2SL are rainfast within one hour after treatment.

Ecomazapyr 2SL will not control plants which are completely submerged or have a majority of their foliage under water.

Ecomazapyr 2SL must be applied to the emergent foliage of the target vegetation, since it has little-to-no activity on submerged vegetation. Residual concentrations of Ecomazapyr 2SL from direct application to water are not expected to be sufficient to provide control of undesirable vegetation. Apply Ecomazapyr 2SL so as to maximize spray contact onto the target vegetation while minimizing overspray onto adjacent or underlying water. For optimum performance, include a surfactant (see **ADJUVANTS** section for specific recommendations) in the spray solution and apply to actively growing weeds. Ecomazapyr 2SL may be applied in spot treatments by using low-volume directed application techniques or broadcast by using ground equipment, water craft or helicopter.

Apply Ecomazapyr 2SL with surface or helicopter application equipment in at least 5 gallons of water per acre. When applying by helicopter, follow directions under the **AERIAL APPLICATIONS** section of this label, otherwise refer to section on **GROUND APPLICATIONS** when using surface equipment.

Applications to moving bodies of water should be made while traveling upstream to prevent concentration of this herbicide in water. Do not apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When target vegetation covers a large percentage of the surface area of impounded water, apply Ecomazapyr 2SL to alternating strips (i.e., Do not apply to every other swath) to avoid oxygen depletion due to decaying vegetation, since oxygen depletion may result in the suffocation of sensitive aquatic organisms. Do not treat more than one half of the surface area of the water in a single operation and wait at least 10 to 14 days before retreatment. Begin treatment along the shore and proceed outward in alternating swaths as described above to allow aquatic organisms to move into untreated areas.

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Avoid wash-off of sprayed foliage by spray boat or recreational boat backwash for one hour after application.

Apply Ecomazapyr 2SL at 2 to 6 pints per acre, depending on weed species and weed density. Use higher rates for heavy weed pressure. Refer to the **AQUATIC WEEDS CONTROLLED ECOMAZAPYR 2SL** section and the **ADDITIONAL WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section of this label for specifics. Do not exceed 6 pints per acre (1.5 lb ai/A) per year.

Ecomazapyr 2SL may also be applied as a draw down treatment in areas described above. Apply Ecomazapyr 2SL to weeds after water has been drained and allow 14 days before reintroduction of water.

**PRECAUTIONS FOR AVOIDING INJURY TO NON-TARGET PLANTS**

Ecomazapyr 2SL can occasionally affect non-target or desirable vegetation by root uptake of the herbicide from treated soil. Injury or loss of non-target plants may result if Ecomazapyr 2SL is applied onto or near desirable plants, or to areas where their roots extend, or in areas where treated soil may be washed or moved into contact with their root zone.

When making applications along shorelines where desirable plants may be present, exercise caution to avoid spray contact onto their foliage or spray application to the soil in which they are rooted. Shoreline plants with roots that extend into the waters where Ecomazapyr 2SL has been applied will generally not be adversely affected.

If treated vegetation is to be removed from the application site, **DO NOT** use the vegetative matter as mulch or compost on or around desirable species.

**IMPORTANT**

Do not use on food crops. Do not apply this product within one-half mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within one-half mile of an active potable water intake in a standing body of water, such as a lake, pond or reservoir. Do not apply to water used for irrigation except as described in **APPLICATION TO WATERS USED FOR IRRIGATION** section of this label. Keep away from fertilizers, insecticides, fungicides, and seeds. Do not drain or flush equipment on or near desirable plants, or onto areas where their roots may extend, or in locations where the chemical or treated soil may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts or similar areas where roots of desirable vegetation may extend and be exposed to potential injury and/or mortality from root uptake of Ecomazapyr 2SL. Do not side trim desirable vegetation with this product unless severe injury or plant death is acceptable. Prevent drift of spray to desirable plants.

Clean application equipment after using this product by thoroughly flushing with water.

**NON-AGRICULTURAL USE REQUIREMENTS**

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

Non-crop weed control is not within the scope of the Worker Protection Standard. See the **GENERAL INFORMATION** section of this label for a description of non-crop sites.

Do not enter treated areas without protective clothing until sprays have dried.

**SPRAY DRIFT MANAGEMENT**

**Spray Drift:** Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the entity authorizing spraying are responsible for considering all these factors when making decisions.

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or non-target crops) is minimal. Do not apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, and temperature inversions.

To minimize spray drift, the applicator should be familiar with and take into account the following drift reduction advisory information. Additional information may be available from state enforcement agencies or the Cooperative Extension on the application of this product.

The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces the drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (**see WIND, TEMPERATURE AND HUMIDITY, AND TEMPERATURE INVERSIONS**).

**Controlling Droplet Size:**

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. Do not use nozzles producing a mist droplet spray.



**Application Height:** Making applications at the lowest possible height (helicopter, ground driven spray bloom) that is safe and practical reduces exposure of droplets to evaporation and wind.

**Swath Adjustment:** When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the treatment area, the applicator must compensate for this displacement by adjusting the path of the application equipment (e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

**Wind:** Drift potential is lowest between wind speeds of 3-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

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

**Temperature Inversions:** Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud, which can move in unpredictable directions due to the light variable winds common during temperature 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 concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

**Wind Erosion:** Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

**Aerial Application Methods and Equipment (Helicopters ONLY):**

**Water Volume:** Use 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to produce accurate and uniform distribution of spray particles over the treated area and to avoid spray drift.

**Managing Spray Drift from Aerial Applications:** Applicators must follow these requirements to avoid off-target drift movement: 1) boom length - the distance of the outermost nozzles on the boom must not exceed 3/4 the length of the rotor, 2) nozzle orientation - nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees, and 3) application height - without compromising helicopter safety, applications should be made at a height of 10 feet or less above the crop canopy or tallest plants. Applicators must follow the most restrictive use cautions to avoid drift hazards, including those found in this labeling as well as applicable state and local regulations and ordinances.

**Ground Application (Broadcast): Water Volume:** Use 5 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift.

**AQUATIC SPECIES CONTROLLED BY ECOMAZAPYR 2SL**

**Ecomazapyr 2SL** will control the following target species when used as recommended in the table below. Rate recommendations are expressed as product volume for broadcast applications and as a % solution for directed applications including spot treatments. For % solution applications, do not apply more than the equivalent of 3 quarts of Ecomazapyr 2SL per acre.

COMMON NAME	SCIENTIFIC NAME	RECOMMENDATIONS
<b>Floating Species</b>		
*Duckweed	<i>Lemna minor</i>	2-3 pints/acre (1% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
*Duckweed, Giant	<i>Spirodela polyrriza</i>	2-3 pints/acre (1% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
*Frogbit	<i>Limnobium spongia</i>	1-2 pints/acre (0.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage
*Spatterdock	<i>Nuphar luteum</i>	Apply a tank-mix of 2-4 pints/acre Ecomazapyr 2SL plus 4-6 pints/acre glyphosate (0.5% Ecomazapyr 2SL plus 1.5% glyphosate) in 100 GPA water for best control. Completely cover all actively-growing emergent foliage.
*Water Hyacinth	<i>Eichhornia crassipes</i>	1-2 pints/acre (0.5% solution) in 100 GPA water to actively growing foliage.
*Water Lettuce	<i>Pistia stratiotes</i>	1-2 pints/acre (0.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
<b>Emerged Species</b>		
*Alligatorweed	<i>Alternanthera philoxeroides</i>	1-4 pints/acre (0.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage. Do not apply as a tank-mix with glyphosate, since doing so may reduce control.
*Arrowhead, Duck-potato	<i>Sagittaria</i> spp.	1-2 pints/acre (0.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
*Bacopa, lemon	<i>Bacopa</i> spp.	1-2 pints/acre (0.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.

COMMON NAME	SCIENTIFIC NAME	RECOMMENDATIONS
*Parrot feather	<i>Myriophyllum aquaticum</i>	Apply 2-4 pints in 100 GPA water to actively growing emergent foliage. Foliage must be above water for sufficient uptake.
*Pennywort	<i>Hydrocotyle</i> spp.	1-2 pints/acre (0.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
*Pickerelweed	<i>Pontederia cordata</i>	2-3 pints/acre (1% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
*Taro, wild; Dasheen; Elephant's Ear; Coco Yam	<i>Colocasia esculentum</i>	4-6 pints/acre (1.5% solution) in 100 GPA with a high quality 'sticker' adjuvant. Completely cover all actively-growing emergent foliage.
*Water lily	<i>Nymphaea odorata</i>	2-3 pints/acre (1% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage.
*Water Primrose	<i>Ludwigia uruguayensis</i>	4-6 pints/acre (1.5% solution) in 100 GPA water. Completely cover all actively-growing emergent foliage. Do not apply as a tank-mix with glyphosate, since doing so may reduce control.
<b>Terrestrial/Marginal</b>		
*Soda Apple, aquatic; Nightshade	<i>Solanum tampicense</i>	2 pints/acre applied to foliage.
*Bamboo, Japanese	<i>Phyllostachys</i> spp.	3-4 pints/acre applied to actively-growing foliage before plants set seed heads. The greater the amount of foliage present at treatment, the greater the exposure to the herbicide for plant uptake, which will result in greater root kill.
Brazilian Pepper; Christmasberry	<i>Schinus terebinthifolius</i>	2-4 pints/acre applied to foliage.
Cattail	<i>Typha</i> spp.	2-4 pints (1% solution) applied to actively-growing, green foliage after full leaf elongation. Lower rates will control cattail in the north; higher rates are needed in the south.
Chinese Tallow Tree	<i>Sapium sebiferum</i>	16-24 oz applied to foliage.
Cogon grass	<i>Imperata cylindrica</i>	Burn foliage, till area, then treat in fall at 2 quarts/acre Ecomazapyr 2SL plus MSO applied to new growth.
Cordgrass, prairie	<i>Spartina</i> spp.	4-6 pints applied to actively growing foliage.
*Cutgrass	<i>Zizaniopsis miliacea</i>	4-6 pints applied to actively growing foliage.
*Elephant Grass; Napier Grass	<i>Pennisetum purpureum</i>	3 pints/acre applied to actively growing foliage.
*Flowering rush	<i>Butumu typla</i>	2-3 pints applied to actively growing foliage.
Giant Reed, Wild Cane	<i>Arundo donax</i>	4-6 pints/acre applied in spring to actively growing foliage.
*Golden Bamboo	<i>Phyllostachys aurea</i>	3-4 pints/acre applied to actively-growing foliage before plants set seed heads. The greater the amount of foliage present at treatment, the greater the exposure to the herbicide for plant uptake, which will result in greater root kill.
Junglerice	<i>Echinolchloa colonum</i>	3-4 pints applied to actively growing foliage.
Knapweeds	<i>Centaurea species</i>	Russian Knapweed - Apply 2-3 pints plus 1 quart/acre MSO in the fall after senescence begins.
Knotweed, Japanese (see Fallopia japonica)	<i>Polygonum cuspidatum</i>	3-4 pints/acre applied postemergence to actively growing foliage.
Melaleuca; Paperbark Tree	<i>Melaleuca quinquenervia</i>	For established stands, apply 6 pints/acre Ecomazapyr 2SL plus 6 pints/acre glyphosate plus adjuvant. For best results, use 4 quarts/A methylated seed oil for adjuvant. For ground foliar application, uniformly apply to completely cover all actively-growing foliage. For aerial foliar application, apply in at least two passes in a cross pattern at 10 GPA. For spot treatment, apply a 25% solution of Ecomazapyr 2SL plus 25% solution of glyphosate plus 1.25% MSO in water as a frill or stump treatment.
*Nutgrass; Kili'p'opu	<i>Cyperus rotundus</i>	2 pints Ecomazapyr 2SL plus 1 quart/acre MSO applied early postemergence.
*Nutsedge	<i>Cyperus</i> spp.	2-3 pints postemergence to foliage or pre-emergence incorporated. Non-incorporated preemergence applications will not provide control.
Phragmites; Common Reed	<i>Phragmites australis</i>	4-6 pints/acre applied to actively-growing, green foliage after leaf elongation. Completely cover all actively-growing foliage. If stand has a substantial amount of old stem tissue, mow or burn, allow to regrow to approximately 5' tall before treatment. Lower rates will control phragmites in the north; higher rates are needed in the south.
*Poison Hemlock	<i>Conium maculatum</i>	2 pints Ecomazapyr 2SL plus 1 quart/ acre MSO applied preemergence or early postemergence up to rosette stage before flowering.
Purple Loosestrife	<i>Lythrum salicaria</i>	1 pint/acre applied to actively growing foliage.
Reed canarygrass	<i>Phalaris arundinacea</i>	3-4 pints/acre applied to actively growing foliage.
Rose, swamp	<i>Rosa palustris</i>	2-3 pints/ acre applied to actively growing foliage.
Russian-Olive	<i>Elaeagnus angustifolia</i>	2-4 pints/acre or 1% solution applied to foliage.

COMMON NAME	SCIENTIFIC NAME	RECOMMENDATIONS
Saltcedar; Tamarisk	<i>Tamarix species</i>	Aerially apply 2 quarts Ecomazapyr 2SL plus 0.25% v/v NIS to actively growing foliage during flowering. For spot spraying, use a 1% solution of Ecomazapyr 2SL plus 0.25% v/v NIS and spray to wet foliage. After application wait at least two years before disturbing treated saltcedar. Earlier disturbance can reduce overall control.
Smartweed	<i>Polygonum spp.</i>	2 pints/acre applied early postemergence.
Sumac	<i>Rhus spp.</i>	2-3 pints/acre applied to foliage.
Swamp Morning Glory; Water Spinach; Kangkong	<i>Ipomoea aquatica</i>	1-2 pints/acre Ecomazapyr 2SL plus 1 quart/acre MSO applied at early postemergence.
Torpedo grass	<i>Panicum repens</i>	4 pints/acre (1-1.5% solution). Completely cover all actively growing foliage.
*White Top; Hoary Cress	<i>Cardaria draba</i>	1-2 pints/acre applied in spring to foliage during flowering.
Willow	<i>Salix spp.</i>	2-3 pints/acre Ecomazapyr 2SL. Completely cover all actively growing foliage.

\* Not approved for use in California

**ADDITIONAL WEEDS CONTROLLED BY ECOMAZAPYR 2SL**

When used as recommended on terrestrial sites, Ecomazapyr 2SL will provide preemergence or postemergence control with residual control of the following vegetation species. Annual weeds may be controlled by preemergence or postemergence applications of Ecomazapyr 2SL. For established biennials and perennial vegetation control, postemergence treatments of Ecomazapyr 2SL are recommended.

The tables below show broadcast rates and indicate relative weed sensitivity. It is important to consider relative weed sensitivity when preparing low volume spray solutions (see **LOW VOLUME** section of **GROUND APPLICATIONS** section), since low volume treatments apply less Ecomazapyr 2SL per acre than is shown for the broadcast treatments.

The relative sensitivity of the species listed below can also be used to determine the relative risk of causing non-target plant injury if any of those species are considered to be desirable within the treatment area.

**Resistant Biotypes:** Some weeds listed below may have naturally occurring biotypes (plants within a given species that have a slightly different but distinct genetic makeup from other plants of that species) that are not effectively controlled by this and/or other herbicides (Oust®) with the ALS/AHAS enzyme-inhibiting mode of action. If naturally- occurring ALS/AHAS-resistant biotypes are present in area. Ecomazapyr 2SL should be tank-mixed or applied sequentially with a registered herbicide that depends on a different mode of action to ensure control.

**GRASSES**  
Apply 2-3 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Annual bluegrass	<i>Poa annua</i>	A
Broadleaf signalgrass	<i>Brachiaria platyphylla</i>	A
Canada bluegrass	<i>Poa compressa</i>	P
Downy brome	<i>Bromus tectorum</i>	A
Fescue	<i>Festuca spp.</i>	A/P
Foxtail	<i>Setaria spp.</i>	A
Italian ryegrass	<i>Lolium multiflorum</i>	A
Johnsongrass	<i>Sorghum halepense</i>	P
Kentucky bluegrass	<i>Poa pratensis</i>	P
Lovegrass	<i>Eragrostis spp.</i>	A/P
*Napier grass	<i>Pennisetum purpureum</i>	P
Orchardgrass	<i>Dactylis glomerata</i>	P
Paragrass	<i>Brachiaria mutica</i>	P
Quackgrass	<i>Agropyron repens</i>	P
Sandbur	<i>Cenchrus spp.</i>	A
Sand dropseed	<i>Sporobolus cryptandrus</i>	P
Smooth brome	<i>Bromus inermis</i>	P
Vaseygrass	<i>Paspalum urvillei</i>	P
Wild Oats	<i>Avena fatua</i>	A
Witchgrass	<i>Panicum capillare</i>	A

Apply 3-4 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Barnyardgrass	<i>Echinochloa crus-gali</i>	A
Beardgrass	<i>Andropogon</i> spp.	P
Bluegrass, Annual	<i>Poa annua</i>	A
*Bulrush	<i>Scirpus validus</i>	P
Cheat	<i>Bromus secalinus</i>	A
Crabgrass	<i>Digitaria</i> spp.	A
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	A
Fall Panicum	<i>Panicum dichotomiflorum</i>	A
Goosegrass	<i>Eleusine indica</i>	A
Itchgrass	<i>Rottboellia exaltata</i>	A
Lovegrass	<i>Eragrostis</i> spp.	A
*Maidencane	<i>Panicum hemitomon</i>	A
Panicum, Browntop	<i>Panicum fasciculatum</i>	A
Panicum, Texas	<i>Panicum texanum</i>	A
Prairie threeawn	<i>Aristida oligantha</i>	P
Sandbur, Field	<i>Cenchrus incertus</i>	A
Signalgrass	<i>Brachiaria platyphylla</i>	A
Wild barley	<i>Hordeum</i> spp.	A
Woolly Cupgrass	<i>Eriochloa villosa</i>	A

Apply 4-6 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Bahiagrass	<i>Paspalum notatum</i>	P
Bermudagrass <sup>3</sup>	<i>Cynodon dactylon</i>	P
Big bluestem	<i>Andropogon gerardii</i>	P
Dallisgrass	<i>Paspalum dilatatum</i>	P
Feathertop	<i>Pennisetum villosum</i>	P
Guineagrass	<i>Panicum maximum</i>	P
Saltgrass <sup>3</sup>	<i>Distichlis stricta</i>	P
Sand dropseed	<i>Sporobolus cryptandrus</i>	P
Sprangletop	<i>Leptochloa</i> spp.	A
Timothy	<i>Phleum pratense</i>	P
Wirestem muhly	<i>Muhlenbergia frondosa</i>	P

## BROADLEAF WEEDS

Apply 2-3 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Burdock	<i>Arctium</i> spp.	B
Carpetweed	<i>Mollugo verticillata</i>	A
Carolina geranium	<i>Geranium carolinianum</i>	A
Clover	<i>Trifolium</i> spp.	A/P
Common chickweed	<i>Stellaria media</i>	A
Common ragweed	<i>Ambrosia artemisiifolia</i>	A
Dandelion	<i>Taraxacum officinale</i>	P
Dog fennel	<i>Eupatorium capillifolium</i>	A
Filaree	<i>Erodium</i> spp.	A
Fleabane	<i>Erigeron</i> spp.	A
Hoary vervain	<i>Verbena stricta</i>	P
Indian mustard	<i>Brassica juncea</i>	A
Kochia	<i>Kochia scoparia</i>	A
Lambsquarters	<i>Chenopodium album</i>	A
*Lespedeza	<i>Lespedeza</i> spp.	P
Miners lettuce	<i>Montia perfoliata</i>	A
Mullein	<i>Verbascum</i> spp.	B
Nettleleaf goosefoot	<i>Chenopodium murale</i>	A
Oxeye daisy	<i>Chrysanthemum leucanthemum</i>	P
Pepperweed	<i>Lepidium</i> spp.	A
Pigweed	<i>Amaranthus</i> spp.	A
Puncturevine	<i>Tribulus terrestris</i>	A
Russian thistle	<i>Salsola kali</i>	A
Smartweed	<i>Polygonum</i> spp.	A/P
Sorrell	<i>Rumex</i> spp.	P

Sunflower	<i>Helianthus</i> spp.	A
Sweet clover	<i>Melilotus</i> spp.	A/B
Tansymustard	<i>Descurainia pinnata</i>	A
Western ragweed	<i>Ambrosia psilostachya</i>	P
Wild carrot	<i>Daucus carota</i>	B
Wild lettuce	<i>Lactuca</i> spp.	A/B
Wild parsnip	<i>Pastinaca sativa</i>	B
Wild turnip	<i>Brassica campestris</i>	B
Woollyleaf bursage	<i>Franseria tomentosa</i>	P
Yellow woodsorrel	<i>Oxalis stricta</i>	P

**Apply 3-4 pints per acre<sup>1</sup>**

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Broom snakeweed <sup>4</sup>	<i>Gutierrezia sarothrae</i>	P
Bull thistle	<i>Cirsium vulgare</i>	B
Burclover	<i>Medicago</i> spp.	A
Chickweed, Mouseear	<i>Cerastium vulgatum</i>	A
Clover, Hop	<i>Trifolium procumbens</i>	A
Cocklebur	<i>Xanthium strumarium</i>	A
Cudweed	<i>Gnaphalium</i> spp.	A
Desert Camelthorn	<i>Alhagi pseudalhagi</i>	P
Dock	<i>Rumex</i> spp.	P
Fiddleneck	<i>Amsinckia intermedia</i>	A
Goldenrod	<i>Solidago</i> spp.	P
Henbit	<i>Lamium applexicaule</i>	A
Knotweed, prostrate	<i>Polygonum aviculare</i>	A/P
Pokeweed	<i>Phytolacca americana</i>	P
Purslane	<i>Portulaca</i> spp.	A
Pusley, Florida	<i>Richardia scabra</i>	A
Rocket, London	<i>Sisymbrium irio</i>	A
Rush skeletonweed <sup>4</sup>	<i>Chondrilla juncea</i>	B
Saltbush	<i>Atriplex</i> spp.	A
Sheperd's-purse	<i>Capsella bursa-pastoris</i>	A
Spurge, Annual	<i>Euphorbia</i> spp.	A
Stinging nettle <sup>4</sup>	<i>Urtica dioica</i>	P
Velvetleaf	<i>Abutilon theophrasti</i>	A
Yellow starthistle	<i>Centaurea solstitialis</i>	A

**Apply 4-6 pints per acre<sup>1</sup>**

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Arrowwood	<i>Pluchea sericea</i>	A
Canada thistle	<i>Cirsium arvense</i>	P
Giant ragweed	<i>Ambrosia trifida</i>	A
Grey rabbitbrush	<i>Chrysothamhus nauseosus</i>	P
Little mallow	<i>Malva parviflora</i>	B
Milkweed	<i>Asclepias</i> spp.	P
Primrose	<i>Oenothera kunthiana</i>	P
Silverleaf nightshade	<i>Solanum eleagnifolium</i>	P
Sowthistle	<i>Sonchus</i> spp.	A
Texas thistle	<i>Cirsium texanum</i>	P

**VINES AND BRAMBLES**

**Apply 1 pint per acre**

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Field bindweed	<i>Convolvulus arvensis</i>	P
Hedge bindweed	<i>Calystegia sequium</i>	A

**Apply 2-3 pints per acre<sup>1</sup>**

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Wild buckwheat	<i>Polygonum convolvulus</i>	P

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Apply 3-4 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
Greenbriar	<i>Smilax</i> spp.	P
Honeysuckle	<i>Lonicera</i> spp.	P
Morningglory	<i>Ipomoea</i> spp.	A/P
Poison ivy	<i>Rhus radicans</i>	P
Redvine	<i>Brunnichia cirrhosa</i>	P
Wild rose, including: Multiflora rose McCartney rose	<i>Rosa</i> spp.  <i>Rosa multiflora</i> <i>Rosa bracteata</i>	P  P P

Apply 4-6 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
*Kudzu <sup>3</sup>	<i>Pueraria lobata</i>	P
Trumpet creeper	<i>Campsis radicans</i>	P
Virginia creeper	<i>Parthenocissus quinquefolia</i>	P
Wild grape	<i>Vitis</i> spp.	P

BRUSH SPECIES

Apply 4-6 pints per acre<sup>1</sup>

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
American beech	<i>Fagus grandifolia</i>	P
Ash	<i>Fraxinus</i> spp.	P
Bald cypress	<i>Taxodium distichum</i>	P
Bigleaf maple	<i>Acer macrophyllum</i>	P
Black locust <sup>5</sup>	<i>Robinia pseudoacacia</i>	P
Black gum	<i>Nyssa sylvatica</i>	P
Box elder	<i>Acer negundo</i>	P
Cherry	<i>Prunus</i> spp.	P
Chinaberry	<i>Melia azadarach</i>	P
Dogwood	<i>Cornus</i> spp.	P
Elm <sup>6</sup>	<i>Ulmus</i> spp.	P
Hawthorn	<i>Crataegus</i> spp.	P
Hickory	<i>Carya</i> spp.	P
Honeylocust <sup>5</sup>	<i>Gleditsia triacanthos</i>	P
Maple	<i>Acer</i> spp.	P
Mulberry	<i>Morus</i> spp.	P
Oak	<i>Quercus</i> spp.	P
Persimmon	<i>Diospyros virginiana</i>	P
*Pine <sup>5</sup>	<i>Pinus</i> spp.	P
Poplar	<i>Populus</i> spp.	P
Privet	<i>Ligustrum vulgare</i>	P
Red Alder	<i>Alnus rubra</i>	P
Red Maple	<i>Acer rubrum</i>	P
Russian Olive	<i>Eleagnus angustifolia</i>	P
Sassafras	<i>Sassafras albidum</i>	P
Sourwood	<i>Oxydendrum arboretum</i>	P
Sweetgum	<i>Liquidambar styraciflua</i>	P
*Water willow	<i>Justica americana</i>	P
Willow	<i>Salix</i> spp.	P
Yellow poplar	<i>Liriodendron tulipifera</i>	P

<sup>1</sup> The higher rates should be used where heavy or well-established infestations occur.

<sup>2</sup> Growth Habit – A = Annual, B = Biennial, P = Perennial

<sup>3</sup> Use a minimum of 75 GPA - Control of established stands may require repeat applications.

<sup>4</sup> For best results early postemergence applications are required.

<sup>5</sup> Tank mix with glyphosate or triclopyr.

<sup>6</sup> Tank-mix with glyphosate.

\*Not approved for use in California.

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### ADJUVANTS

For optimal postemergence performance of Ecomazapyr 2SL, the addition of an adjuvant to the spray solution is essential to aid in the deposition and uptake of the herbicide. For this purpose, ONLY use spray adjuvants that are approved or appropriate for aquatic use.

When an adjuvant is to be used with this product, Makhteshim Agan of North America, Inc. suggests the use of a Chemical Producers and Distributors Association certified adjuvant.

**Nonionic Surfactants:** Use a nonionic surfactant at 0.25% v/v or higher (depending on surfactant manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product. Alcohols, fatty acids, horticultural spray oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet these requirements.

**Methylated Seed Oils or Vegetable Oil Concentrates:** Methylated seed oil or vegetable oil concentrate may be used at 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, mix methylated seed oil or vegetable oil concentrate at a rate of 1% of the total spray volume.

**Silicone Based Surfactants:** Silicone-based surfactants allow greater spreading of the spray droplet on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly and limit herbicide uptake. Refer to the surfactant manufacturer's label for specific recommendations.

**Invert emulsions:** Ecomazapyr 2SL can be applied as an invert emulsion (water-in-oil emulsion) designed to minimize spray drift and spray run-off, thereby delivering more herbicide to the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Refer to the invert chemical label for proper mixing directions.

**Other:** Anti-foam agents, spray pattern indicators or drift reduction agents may also be used if necessary or desired. Refer to the adjuvant manufacturer's label for specific recommendations.

### AQUATIC USES, PRECAUTIONS AND RESTRICTIONS

Ecomazapyr 2SL may ONLY be used for application to control undesirable emergent and floating aquatic vegetation in and around standing and flowing water, including estuarine and marine sites. Ecomazapyr 2SL may also be used to control undesirable vegetation growing in or around surface water in wetland, riparian and terrestrial habitats where applications may inadvertently contact surface water.

Do not apply more than 6 pints of product (1.5 pounds acid equivalent) per acre per year.

Aerial application is restricted to helicopter equipment only.

Ecomazapyr 2SL can only be applied by federal or state agencies, such as Water Management District personnel, municipal officials and the U.S. Army Corps of Engineers, or those applicators who are licensed or certified as aquatic pest control applicators and are authorized by the state or local government.

Treatment of other-than-non-native, invasive species is limited to those that have been determined to be nuisance vegetation by a federal or state government entity.

**Applications to private waters:** Ecomazapyr 2SL may be applied to private non-flowing waters, such as ponds, lakes and drainage ditches where there is minimal or no outflow to public waters.

**Applications to public waters:** Ecomazapyr 2SL may be applied to public waters such as ponds, lakes, reservoirs, marshes, bayous, drainage ditches, canals, streams, rivers and other slow-moving or non-moving waters for control of aquatic weeds or of riparian and wetland weed species.

Consult local state fish and game agency and water control authorities before applying this product to any public waters. Permits may be required to treat such water.

**Recreational Use of Water in Treated Areas:** There are no restrictions on the use of water in treated areas for recreational purposes, including swimming and fishing.

#### Livestock Use of Water in/from Treated Areas:

There are no restrictions on livestock consumption of water from treated areas.

**Precautions for Potable Water Intakes:** Do not apply Ecomazapyr 2SL directly to waters within one-half mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within one-half mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within one-half mile of active potable water intakes, the water intake must be turned off during application and for at least 48 hours after the treatment. Such aquatic applications may be made only where there are alternative water sources or holding ponds that can be used while active potable water intakes are turned off during the minimum 48 hours post-treatment period. **NOTE:** Existing potable water intakes which are no longer in use, such as those replaced by connections to wells or municipal water systems, are not considered to be active potable water intakes. This restriction does not apply to intermittent, inadvertent overspray of water in terrestrial use sites.

### APPLICATION TO WATERS USED FOR IRRIGATION

Do not use water treated with Ecomazapyr 2SL for irrigation purposes for 120 days after treatment or until Ecomazapyr 2SL residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

**Seasonal Irrigation Waters:** Ecomazapyr 2SL may be applied during the off-season to surface waters that are used for irrigation on a seasonable basis, provided at least 120 days elapses between Ecomazapyr 2SL treatment and the first use of treated water for

irrigation or until Ecomazapyr 2SL residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

**Irrigation Canals/Ditches:** Do not apply Ecomazapyr 2SL to irrigation canals/ditches unless the 120-day restriction on irrigation water usage can be observed or Ecomazapyr 2SL residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less. Do not apply Ecomazapyr 2SL to dry irrigation canals/ditches.

**Quiescent or Slow Moving Waters:** In lakes and reservoirs do not apply Ecomazapyr 2SL within one (1) mile of an active irrigation water intake during the irrigation season. Applications less than one (1) mile from an inactive irrigation water intake may be made during the off-season, provided the irrigation intake will remain inactive for at least 120 days after treatment or until Ecomazapyr 2SL residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

**Moving Waters:** Do not apply Ecomazapyr 2SL within one-half mile downstream of an active irrigation water intake. When making applications upstream from an active irrigation water intake, the intake must be turned off for a period of time sufficient to allow the upstream treated water to completely flow past the irrigation intake. Shut off time will be determined by the speed of water flow and the distance and length of water treated upstream from the intake. Consult local, state and/or federal authorities before making any applications upstream from an active irrigation water intake.

#### TANK MIXES

Ecomazapyr 2SL may be tank-mixed with other aquatic-use herbicides to broaden the spectrum of control of emergent and floating aquatic vegetation, provided that the tank mix product label does not prohibit such mixing. Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label when making an application involving tank-mixes.

#### AERIAL APPLICATIONS

Exercise all precautions to minimize or eliminate spray drift. Aerial applications may ONLY be made by helicopter; applications may NOT be made by airplane. Helicopters can be used to apply Ecomazapyr 2SL; however, do not apply by helicopter unless appropriate buffer zones can be maintained to prevent spray drift out of the target area or where damage to desirable vegetation can be tolerated. Helicopters equipped with a Microfoil™ boom, Thru-Valve™ boom or raindrop nozzles must be used and calibrated. Unless applying with a Microfoil boom, use a drift control agent at the recommended label rate. To avoid drift, do not make applications during inversion conditions, when winds are gusty, or during any other conditions that promote spray drift. Side trimming is not recommended with Ecomazapyr 2SL unless death of treated vegetation is acceptable.

Uniformly apply Ecomazapyr 2SL in 5 to 30 gallons of water per acre. Use a nonionic surfactant, methylated seed oil or silicone-based surfactant (see the **ADJUVANTS** section of this label for specific recommendations). An anti-foam agent may be added, if needed.

Thoroughly clean application equipment, including landing gear, by thoroughly flushing with water immediately after using this product. Prolonged exposure of uncoated/unpainted steel (except stainless steel) surfaces to this product may result in corrosion and failure of the exposed part. Maintaining painted surfaces may prevent corrosion.

#### GROUND APPLICATIONS

##### FOLIAR APPLICATIONS:

**For Low Volume Foliar Applications:** Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. Thoroughly mix 0.5 to 5% (v/v) Ecomazapyr 2SL in water plus surfactant (see the **ADJUVANTS** section of this label for recommendations). Use an anti-foam agent at the recommended rate, if needed. For difficult to control species (see **AQUATIC WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section and the **ADDITIONAL WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section for relative susceptibility of weed species), apply the higher concentrations of herbicide and/or spray volumes but do not apply more than 6 pints of Ecomazapyr 2SL per acre. Excessive wetting of foliage is not recommended. See the **SPRAY SOLUTION MIXING GUIDE** below for some suggested volumes of Ecomazapyr 2SL and water.

Select appropriate nozzles to avoid over-application. Proper application is critical to ensure desirable results. Optimum results are achieved when the spray covers the crown and approximately 70 percent of the plant. The use of a flat fan nozzle tip with a spray angle of 40 degrees or less will aid in proper deposition.

Recommended nozzle tip sizes include 4004E or 1504E. For a straight stream and cone pattern, use adjustable cone nozzles such as 5500 X3 or 5500 X4. Attaching a rollover valve onto a Spraying Systems Model 30 gunjet or other similar spray guns allows for the use of both a flat fan and cone tips on the same gun.

Moisten, but do not drench target vegetation. Do not spray to run off.

**For Low Volume Foliar Applications by Backpacks:** For low-growing species, spray downward to cover approximately 70% of the plant and the crown.

For target species 4 to 8 feet tall, apply a directed spray in a smooth vertical motion from the crown upward on at least two sides of the target vegetation, making sure to cover the crown whenever possible.

For target species over 8 feet tall, apply a directed spray in a smooth zig-zag motion from the crown upward on at least two sides of the target brush.

**For Low Volume Foliar Applications with Hydraulic Handgun Equipment:** Use same technique as described above for **Low Volume with Backpacks**.

For broadcast applications, simulate a gentle rain near the top of target vegetation, allowing spray to penetrate the target foliage and contact the crown without run-off onto understory vegetation. Do not spray to run-off. Herbicide spray that contacts understory vegetation may result in severe injury or death of understory plants.



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**SPRAY SOLUTION MIXING GUIDE FOR LOW-VOLUME FOLIAR APPLICATIONS**

Amount of spray solution	Desired Concentration (fluid volume)				
	0.5%	0.75%	1.0%	1.5%	5.0%
	(amount of Ecomazapyr 2SL to use)				
1 gallon	0.6 oz	0.9 oz	1.3 oz	1.9 oz	6.5 oz
3 gallons	1.9 oz	2.8 oz	3.8 oz	5.8 oz	1.2 pint
4 gallons	2.5 oz	3.8 oz	5.1 oz	7.7 oz	1.6 pint
5 gallons	3.2 oz	4.8 oz	6.5 oz	9.6 oz	2 pints
50 gallons	2 pints	3 pints	4 pints	6 pints	10 pints
100 gallons	4 pints	6 pints	8 pints	6 quarts	5 gallons

2 tablespoons = 1 fluid ounce

**For High Volume Foliar Applications:** For optimum performance when spraying medium to high-density vegetation, use equipment calibrated to deliver up to 100 gallons of finished spray per acre (GPA). Application volumes exceeding 100 gallons GPA may result in excessive spray run-off, causing injury to desirable ground cover species. Thoroughly mix Ecomazapyr 2SL in water and include a surfactant (see **ADJUVANTS** section for surfactant recommendations). Use an anti-foam agent according to its label, if needed. For hard-to-control species (see **AQUATIC WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section and the **ADDITIONAL WEEDS CONTROLLED BY ECOMAZAPYR 2SL** section for relative susceptibility of weeds), use the higher concentrations of the herbicide and/or spray volumes, but do not apply more than 6 pints of Ecomazapyr 2SL per acre. Uniformly cover the foliage of the target vegetation but do not apply to run-off.

**Side Trimming:** Do not side trim with Ecomazapyr 2SL unless severe injury or death of the treated vegetation is acceptable. Ecomazapyr 2SL is readily translocated and can result in the death of the vegetation.

**CUT SURFACE TREATMENTS**

Ecomazapyr 2SL will control undesirable woody vegetation when applied as a water solution to the cambium area of freshly-cut stump surfaces or to cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. Tree injection and cut stem treatments are most effective in late summer and early fall. Do not over apply solution causing run-off from the cut surface.

**NOTE:** Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

**CUT SURFACE APPLICATIONS WITH DILUTE AND CONCENTRATE SOLUTIONS:**

Mix Ecomazapyr 2SL as either a concentrated or dilute solution for cut surface treatments. Apply dilute solutions to the cut surface of the stump or to cuts on the stem of the target woody vegetation. Apply concentrate solutions to cuts on the stem. Use of concentrated solutions permits application to fewer cuts on the stem, especially for large diameter trees. Follow the application directions below to determine proper application techniques for each type of solution.

To prepare a dilute solution, mix 8 to 12 fluid ounces of Ecomazapyr 2SL with one gallon of water. If temperatures are such that freezing of the spray mixture may occur, antifreeze (ethylene glycol) may be added according to manufacturer's label to prevent freezing. The use of a surfactant or penetrating agent may improve herbicide uptake through partially callused cambium tissues.

To prepare a concentrated solution, mix 2 quarts of Ecomazapyr 2SL with no more than 1 quart water.

**For cut stump treatments:** Spray or brush the solution onto the cambium area of the freshly cut stump surface. Thoroughly wet the entire cambium area (the wood just inside the bark of the stump).

**For cut stem (injection, hack and squirt) treatments:**

**Dilute Solutions:** Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than one inch intervals between cut edges. Insure that the injector completely penetrates the bark at each injection site.

**Concentrate Solutions:** Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least one injection cut for every 3 inches of Diameter at Breast Height (DBH) on the target tree. For example, a 3-inch DBH tree will receive 1 injection cut while a 6-inch DBH tree will receive 2 injection cuts. On trees requiring more than one injection site, place the injection cuts at approximately equal intervals around the tree.

**Frill or girdle treatments:** Use a hatchet, machete or chainsaw to make cuts through the bark around the tree to expose the cambium. The cuts should angle downward into the cambium sufficiently deep to expose at least two growth rings. Use a spray applicator or brush to apply a 25% to 100% solution of Ecomazapyr 2SL into each cut until thoroughly wet. Avoid applying so much herbicide that runoff to the ground or water occurs.

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### STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** DO NOT store below 10°F.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

#### CONTAINER DISPOSAL:

**Nonrefillable Container (five gallons or less):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Nonrefillable Container (greater than five gallons):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Refillable Container:** Refillable container. Refill this container with imazapyr only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or 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.

### LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following **CONDITIONS, DISCLAIMER OF WARRANTIES** and **LIMITATIONS OF LIABILITY**.

**CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Makhteshim Agan of North America, Inc. All such risks shall be assumed by the user or buyer.

**DISCLAIMER OF WARRANTIES:** To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Makhteshim Agan of North America, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

**LIMITATIONS OF LIABILITY:** To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Makhteshim Agan of North America, Inc.'s election, the replacement of product.

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Thru-Valve is a trademark of Waldrum Specialties.

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