

GROUP 2 HERBICIDE

# Agri Star®

## SPECIMEN LABEL

# IMAZACAST

*For The Control of Vegetation in and Around Aquatic and Noncropland Sites Including Areas That May Be Grazed or Cut for Hay*

**ACTIVE INGREDIENT:**

Ammonium salt of imazamox: 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-(methoxymethyl)-3-pyridinecarboxylic acid\* ..... 12.1%

**OTHER INGREDIENTS:** ..... 87.9%

**TOTAL:** ..... 100.0%

\*Equivalent to 11.4% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-methoxymethyl)-3-pyridinecarboxylic acid  
1 gallon contains 1.0 pound of active ingredient as the free acid.

EPA Reg. No. 42750-314

EPA Est. No. 42750-MO-001

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION/PRECAUCION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en details. (If you do not understand this label, find someone to explain it to you in detail.)

**FIRST AID**

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice. **IF IN EYES:** Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes. Call a poison control center or doctor for treatment advice. **IF INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth to mouth if possible. Call a poison control center or doctor for further treatment advice.

**HOTLINE NUMBER**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In the event of a medical or transport emergency, contact CHEMTREC at 1 -800-424-9300

**See inside for complete Precautionary Statements and Directions for Use**

Manufactured By:

**ALBAUGH, LLC**

1525 NE 36th Street  
Ankeny, Iowa 50021



## **PRECAUTIONARY STATEMENTS**

### **HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION.** Harmful if absorbed through skin or inhaled. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing.

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**Applicators and other handlers must wear:**

1. Long-sleeved shirt and long pants
2. Chemical-resistant gloves such as barrier laminate, butyl rubber >14 mils, nitrile rubber > 14 mils, neoprene rubber > 14 mils, natural rubber (includes natural rubber blends and laminates) >14 mils, polyethylene, polyvinyl chloride (PVC) > 14 mils, or viton > 14 mils
3. Shoes plus socks

Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. DO NOT reuse them.

### **USER SAFETY RECOMMENDATIONS**

**Users should:**

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

### **ENVIRONMENTAL HAZARDS**

This pesticide may be hazardous to plants outside the treated area. DO NOT apply to water except as specified in this label. DO NOT contaminate water when disposing of equipment washwaters and rinsate.

### **PHYSICAL OR CHEMICAL HAZARDS**

Do not allow contact with oxidizing agents, Hazardous chemical reaction may occur.

### **DIRECTIONS FOR USE**

It is a violation of federal law to use this product in a manner inconsistent with its labeling. This labeling must be in the possession of the user at the time of pesticide application.

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.

Ensure spray drift to nontarget susceptible species does not occur.

DO NOT apply IMAZACAST herbicide in any manner not specifically described in this label.

Observe all cautions and limitations on this label and on the labels of products used in combination with IMAZACAST. DO NOT use IMAZACAST other than in accordance with the instructions set forth on this label. Keep containers closed to avoid spills and contamination.

## STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

**PESTICIDE STORAGE:** KEEP FROM FREEZING. DO NOT store below 32° F.

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

### **CONTAINER HANDLING:**

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

### **Triple rinse containers small enough to shake (capacity ≤ 5 gallons) as follows:**

Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

### **Triple rinse containers too large to shake (capacity > 5 gallons) as follows:**

Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

**Pressure rinse as follows:** Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable Container. Refill this container with pesticide only. DO NOT reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. Triple rinse as follows: 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% 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. When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled, with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions; worn-out threads and closure devices. Check for leaks after refilling and before transport. DO NOT transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

### **Steps to take if material is released or spilled:**

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing, and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

## **PRODUCT INFORMATION**

IMAZACAST herbicide is an aqueous formulation that may be diluted in water and either applied directly to water for the control/suppression of certain submerged aquatic vegetation or applied as a broadcast or spot spray to floating and emergent vegetation. Aquatic sites that may be treated include estuarine and marine sites, ponds, lakes, reservoirs, wetlands, marshes, swamps, bayous, arroyos, ditches, canals, streams, rivers, creeks and other slow-moving or quiescent bodies of water. IMAZACAST may also be used during drawdown conditions. IMAZACAST may also be applied for terrestrial and riparian vegetation control in industrial noncropland sites, and railroad, utility, and highway rights-of-way. Industrial noncropland sites include utility plant sites, tank farms, pumping installations, storage areas, fence rows and ditch banks. IMAZACAST may also be used for the establishment and maintenance of wildlife openings. IMAZACAST may also be used on those sites listed above that may be grazed or cut for hay.

IMAZACAST is quickly absorbed by foliage and/or plant roots and rapidly translocated to the growing points stopping growth. Susceptible plants may develop a yellow appearance or general discoloration and will eventually die or be severely growth-inhibited.

IMAZACAST is herbicidally active on many submerged, emergent and floating broadleaf and monocot aquatic plants. The relative levels of control and selectivity can be manipulated by using a choice of rates and herbicide placement (water-injected or floating/emergent foliar application).

To help maintain the utility of herbicide programs, the use of herbicides with different modes of action is effective in managing weed resistance.

## **SPRAY ADJUVANTS**

Applications of IMAZACAST to emergent, floating or shoreline species require the use of a spray adjuvant. Always use a spray adjuvant that is appropriate for aquatic sites.

### **Nonionic Surfactants**

Use a nonionic surfactant at 0.25% volume/volume (v/v) or higher (see 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 an HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product (alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements).

### **Methylated Seed Oils or Vegetable Oil Concentrates**

Instead of a surfactant, a methylated seed oil or vegetable-based seed, 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-based seed oil concentrates at 1 % of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in IMAZACAST deposition and uptake by plants under stress.

### **Silicone-based Surfactants**

See manufacturer's label for specific rate recommendations. Silicone-based Surfactants may reduce the surface tension of the spray droplet allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

## **Invert Emulsion**

IMAZACAST can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray runoff, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

## **Other**

An antifoaming agent, spray pattern indicator, sinking agent or drift-reducing agent may be applied at the product labeled rate if necessary or desired.

## **Spray Drift Requirements for Aerial Application**

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the fixed wingspan or 90% of the rotor blade diameter to reduce spray drift.
- DO NOT apply when wind speed is greater than 10 mph.
- If applying at wind speeds less than 3 mph, the applicator must determine if:
  1. conditions of temperature inversion exist or
  2. stable atmospheric conditions exist at or below nozzle height.

DO NOT make applications into areas of temperature inversions or stable atmospheric conditions.

## **Spray Drift Requirements for Ground Boom Application**

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

DO NOT apply when wind conditions may result in drift, when temperature inversion conditions exist, or when spray may be carried to sensitive areas. See Managing Off-target Movement section for more drift reduction recommendations.

## **AQUATIC USE DIRECTIONS**

IMAZACAST herbicide may be applied directly to the water for the control of submerged aquatic plant species and some emergent and floating species, or as a foliar application specifically for emergent and floating species.

DO NOT exceed maximum use rate per application:

Water treatment - 500 parts per billion (ppb)  
(173 fl ozs of IMAZACAST per acre foot)

Foliar broadcast application - 1 gallon per acre (1.0 lb ae/A)

Foliar spot application - up to 5% IMAZACAST by volume

IMAZACAST may be applied by surface and aerial equipment including both fixed-wing aircraft and helicopter.

## Foliar Application

### Targeted Emergent and/or Floating Vegetation Application

To make surface applications targeting emergent or floating vegetation, uniformly apply with properly calibrated broadcast or spot treatment equipment in 10 or more gallons of water per acre. Spot treatments can be made with up to 5% IMAZACAST by volume. To ensure thorough spray coverage, higher spray volumes may be required when treating areas with large and/or dense vegetation. Use an appropriate spray pressure to minimize the drift potential depending upon spray equipment, conditions and application objectives.

### Foliar Treatment of Emergent and Floating Vegetation Guidelines

- Always use a surfactant for foliar applications of emergent and floating weeds.
- Foliar applications of IMAZACAST may be made as a broadcast spray or as a spot spray, with a percent spray solution ranging from 0.25% to 5% IMAZACAST by volume.
- Control will be reduced if spray is washed off foliage by wave action.

In aquatic sites, those application techniques described in the Terrestrial Use Directions section may be used to treat emergent vegetation.

## Application to Water

### Water Application to Target Submerged and/or Emergent/Floating Vegetation

IMAZACAST may be broadcast-applied to the water surface or injected below the water surface. IMAZACAST may be applied as undiluted product or diluted with water prior to application. Under surface-matted conditions, inject IMAZACAST below the water surface to achieve better product distribution.

Apply IMAZACAST to water to achieve a final concentration of the active ingredient of no more than 500 ppb. Multiple applications of IMAZACAST may be made during the annual growth cycle to maintain the desired vegetation response.

## IMAZACAST Rates per Treated Surface Acre

Average Water Depth of Treatment Site (feet)	Desired Active Ingredient Concentration (ppb)*			
	50	100	200	500
	IMAZACAST Rate per Treated Surface Acre (fl ozs)			
1	17	35	69	173
2	35	69	138	346
3	52	104	207	518
4	70	138	277	691
5	87	173	346	864
6	104	207	415	1037
7	122	242	484	1210
8	139	277	553	1382
9	157	311	622	1555
10	174	346	691	1728

\*IMAZACAST contains 1.0 pound of active ingredient per gallon. There are 128 fl ozs in one gallon.

## **Aerial Application**

IMAZACAST may be applied by both fixed-wing aircraft and helicopter. There is no minimum spray volume when making applications directly to the water. For applications targeting emergent and/or floating vegetation, uniformly apply with properly calibrated equipment in 5 or more gallons of water per surface acre. For best results, make aerial applications using a minimum of 20 gallons per acre.

## **Drawdown Application**

IMAZACAST may be used in drawdown situations to provide postemergence and/or preemergence control/suppression of aquatic vegetation. Apply IMAZACAST as a broadcast spray at rates up to 1 gallon/A or as a spot spray treatment with up to 5% IMAZACAST herbicide by volume. Make applications when water has receded and exposed soil is moist to dry. For postemergence (foliar) applications, wait at least two weeks after application before reintroducing water. When treating irrigation canals, the initial flush of recharge water after application must not be used for irrigation purposes.

## **Restrictions and Limitations**

DO NOT apply IMAZACAST to achieve a total active ingredient concentration in the water greater than 500 ppb.

DO NOT apply more than 1 gallon of IMAZACAST per surface acre for the control of emergent and floating vegetation.

## **Irrigation Restrictions**

- DO NOT use treated water to irrigate greenhouses, nurseries, or hydroponics until the imazamox concentration has been determined by an acceptable method to be less than or equal to 1.0 ppb.
- DO NOT plant sugar beets, onions, potatoes or non-Clearfield® canola in soils that have been previously irrigated with IMAZACAST treated water until a soil bioassay successfully demonstrates acceptable levels of crop tolerance.
- DO NOT use IMAZACAST-treated waters resulting in a concentration greater than 50 ppb for irrigation until residue levels have been shown to be, less than or equal to 50 ppb by an acceptable method.
- DO NOT make applications of this product in and around golf course irrigation, sod farm irrigation, and vineyard irrigation waterbodies without testing potential irrigation water prior to irrigation and confirming the imazamox concentration to be less than or equal to 1.0 ppb.
- In still or quiescent waters, do not use IMAZACAST-treated water resulting in a concentration greater than 10 ppb for irrigation of newly seeded or newly established plants until residue levels have been shown to be less than or equal to 10 ppb by an acceptable method.
- Wait 24 hours before irrigating from still or quiescent waters after making a IMAZACAST application for submerged vegetation less than 100 feet from an irrigation intake.
- Wait 24 hours before irrigating from still and quiescent waters after making a IMAZACAST application to emergent and/or floating vegetation if greater than 25% of the surface area of the water body has been treated or application was made less than 100 feet from an irrigation intake.
- Flowing waters may be used to irrigate allowable sites with no restrictions when IMAZACAST is applied at less than or equal to 2 quarts per acre to waters with an average depth of greater than or equal to 4 feet.
- After application of IMAZACAST to dry irrigation canals/ditches, the initial flush of water during recharge must not be used for irrigation purposes unless the imazamox concentration has been determined by an acceptable method to be less than 25 ppb.

IMAZACAST applied at less than or equal to 2 quarts per acre in or on waters with a minimum average depth greater than or equal to 4 feet will result in IMAZACAST concentrations less than 25 ppb.

## Other Water Use Restrictions

There are no restrictions on livestock watering, swimming, fishing, domestic use, or use of treated water for agricultural sprays.

## Potable Water

IMAZACAST may be applied to potable water sources at concentrations up to 500 ppb to within a distance of 1/4 mile from an active potable water intake. Within 1/4 mile, of an active potable water intake, IMAZACAST may be applied, but water concentrations resulting from injection and/or foliar applications may not exceed 50 ppb. If water concentrations greater than 50 ppb are required, the potable water intake must be shut and, if necessary, an alternate water supply be made available until the water concentration can be shown to be less than 50 ppb by an acceptable method.

## Endangered Plant Species

To prevent potential negative impacts to endangered plant species, DO NOT apply IMAZACAST in a way that adversely affects federally listed endangered and threatened species.

## Weeds Controlled or Suppressed by IMAZACAST

Efficacy and selectivity of IMAZACAST is dependent upon many factors including: dose, time of year, stage of plant growth, plant susceptibility, method of application, and water movement. Rate selection will be partially dependent on characteristics of the treatment area and whether growth regulation or control is desired. Some areas may require a repeat application to control or suppress re-growth. Consult ALBAUGH, LLC to determine best treatment protocols to manage individual species and to meet specific aquatic plant management objectives.

## Emergent, Floating, and Shoreline Species Controlled with Foliar Application

Common Name	Scientific Name	Rate (fl ozs/A)	Comments
Alligatorweed	<i>Alternanthera philoxeroides</i>	64 to 128	Repeat applications may be necessary. Add an aquatic glyphosate herbicide for quicker brownout. See tank mix partner label for rates*.
American lotus	<i>Nelumbo lutea</i>	64 to 128	
Arrowhead	<i>Sagittaria</i> spp.	32 to 64	
Cattail	<i>Typha</i> spp.	32 to 64	Apply after full greenup through killing frost.
Chinese tallowtree	<i>Sapium sebiferum</i>	64 to 128	

(continued)



<b>Common Name</b>	<b>Scientific Name</b>	<b>Rate (fl ozs/A)</b>	<b>Comments</b>
Common reed	<i>Phragmites</i> spp.	96 to 128	Use 1 qt/A methylated seed oil (MSO); apply in late vegetative stage up to killing frost. Also apply as a spot treatment using 1% to 2% IMAZACAST herbicide per spray volume. Older stands of phragmites and stands growing in water may be more difficult to control and will require follow-up applications.
Common salvinia	<i>Salvinia minima</i>	32 to 64	Apply with MSO or MSO + silicone-based surfactant; retreatment will be necessary.
Floating heart	<i>Nymphoides</i> spp.	64 to 128	Also apply as a spot treatment using 2% to 5% IMAZACAST and 1% MSO per spray volume.
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	32 to 64	Repeat applications may be necessary.
Flowering rush	<i>Butomus umbellatus</i>	64 to 128	
Four-leaf clover	<i>Marsilea</i> spp.	32 to 64	
Frog's bit	<i>Lymnobia spongia</i>	16 to 32	
Giant cane	<i>Arundo donax</i>	64 to 128	
Japanese knotweed	<i>Polygonum cuspidatum</i>	64 to 128	
Mexican lily	<i>Nymphaea mexicana</i>	32 to 64	
Mosquito fern	<i>Azolla</i> spp.		Apply using 2% to 5% IMAZACAST and 1% MSO by volume.
Parrotfeather	<i>Myriophyllum aquaticum</i>	64 to 128	Apply only to emergent vegetation.
Pickerelweed	<i>Pontederia cordata</i>	32 to 64	
Saltcedar	<i>Tamarix</i> spp.	64 to 128	Also apply using 2% to 5% IMAZACAST and 1% MSO per spray volume.
Smartweed, ladythumb Smartweed, Pennsylvania Smartweed, swamp	<i>Polygonum persicaria</i> <i>Polygonum pennsylvanicum</i> <i>Polygonum coccineum</i>	64 to 128	
Spatterdock	<i>Nuphar lutea</i>	64 to 128	
Umbrella plant	<i>Cyperus involucratus</i>	64	Apply with MSO or COC. Also apply as a spot treatment using 5% IMAZACAST per spray volume.

(continued)

Common Name	Scientific Name	Rate (fl ozs/A)	Comments
Variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>	64 to 128	Apply with MSO (1% v/v) as an emergent foliar treatment when plants have emerged on the surface. Also apply as a spot treatment using 1% to 3% IMAZACAST per spray volume.
Water chestnut	<i>Trapa natans</i>	64 to 128	Apply with MSO to emergent part of plant. Also apply as a spot treatment using 2% to 5% IMAZACAST per spray volume.
Water hyacinth	<i>Eichhornia crassipes</i>	16 to 32	
Water lettuce	<i>Pistia stratiotes</i>	48 to 96	
Water lily	<i>Nymphaea</i> spp.	32 to 64	
Water primrose	<i>Ludwigia</i> spp.	32 to 64	Add an aquatic glyphosate herbicide for quicker brownout. See tank mix partner label for rates*.
Watershield	<i>Brasenia schreberi</i>	48 to 64	
Wild taro	<i>Colocasia esculenta</i>	96 to 128	

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

## Species Susceptible to Water-injected Applications

The following categories are provided to define species' that may be growth regulated or controlled with 50 to 500 ppb IMAZACAST herbicide following in-water applications: susceptible, moderately susceptible, and less susceptible. The rates associated with each susceptibility category, including the Special Weed Control section, are provided as guidance with the overriding allowance that an application rate from 50 to 500 ppb may be used depending on the aquatic vegetation management objective and the characteristics of the aquatic vegetation and water body being treated.

Some species that are susceptible to foliar applications of IMAZACAST may be less susceptible to in-water applications. Use of higher rates are necessary to achieve desired control/suppression in areas of greater water exchange; when treating more mature or less susceptible plants; when targeting more difficult-to-control aquatic species; and when treating small areas in larger bodies of water (partial or spot treatments). Lower concentrations are generally used when conducting early season large-scale treatments; when greater selectivity is desired; and treating larger areas, more immature or susceptible plants, and areas with less potential for rapid water exchange.

Use of lower rates may increase selectivity on some species within the same category. Effects on susceptible plants can range from control to growth regulation depending on treatment site characteristics, exposure time, and application rate. Susceptible plant species may exhibit herbicide stress or reduced growth during active treatment phases. Whole lake applications with lower rates may provide plant growth regulation or greater selectivity while higher rates will generally provide broader activity.

## Susceptible Vascular Aquatic Plants (50 to 200 ppb)

Common Name	Scientific Name
Curlyleaf pondweed	<i>Potamogeton crispus</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Sago pondweed	<i>Stuckenia pectinata</i>
Water hyacinth	<i>Eichhornia crassipes</i>
Water stargrass	<i>Heteranthera dubia</i>

## Moderately Susceptible Vascular Aquatic Plants (100 to 300 ppb)

Common Name	Scientific Name
American pondweed	<i>Potamogeton nodosus</i>
Bladderwort	<i>Utricularia</i> spp.
Frog's bit	<i>Lymnobia spongia</i>
Illinois pondweed	<i>Potamogeton illinoensis</i>
Pickerelweed	<i>Pontederia cordata</i>
Salvinia	<i>Salvinia</i> spp.
Spikerush	<i>Eleocharis baldwinii</i>
Variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
Wigeon grass	<i>Ruppia maritima</i>

## Less Susceptible Vascular Aquatic Plants (200 to 500 ppb)

Common Name	Scientific Name
Bulrush	<i>Schoenoplectus californicus</i>
Cattail	<i>Typha</i> spp.
Coontail	<i>Ceratophyllum demersum</i>
Eelgrass, Japanese	<i>Zostera japonica</i>
Egeria	<i>Egeria densa</i>
Flowering rush	<i>Butomus umbellatus</i>
Southern naiad	<i>Najas guadalupensis</i>
Spatterdock	<i>Nuphar lutea</i>
Water lily	<i>Nymphaea odorata</i>
Watershield	<i>Brasenia schreberi</i>

## Special Weed Control

**Eurasian Watermilfoil.** Apply IMAZACAST at 100 to 200 ppb to actively growing plants early in the growing season. Applications made to mature Eurasian watermilfoil (vegetation topped out) may require multiple applications.

**Japanese Eelgrass.** Japanese eelgrass is a submerged aquatic plant which can be found in tidal and intertidal areas. IMAZACAST herbicide may be applied directly to the water or directly to the plant (e.g. at low tide).

- **Low-tide application** - To make applications when the plant is exposed at low tide, uniformly apply with properly calibrated broadcast or spot treatment equipment in 10 or more gallons of water per acre. An appropriate spray adjuvant approved for aquatic use may be used but is not required. Spot treatments can be made with up to 5% IMAZACAST by volume. To ensure thorough spray coverage, higher spray volumes may be required when treating areas with large and/or dense vegetation. Use an appropriate spray pressure to minimize drift potential depending upon spray equipment, conditions, and application objectives. Apply 4 fl ozs to 32 fl ozs IMAZACAST/A. Use the lower rate for management of seedlings. An appropriate aquatic use spray adjuvant may be used but is not required.
- **In-water application** - When Japanese eelgrass is submerged, IMAZACAST may be broadcast applied to the water surface or injected below the water surface. IMAZACAST may be applied as undiluted product or diluted with water before application. Under surface-matted conditions, inject IMAZACAST below the water surface to achieve better product distribution. Apply IMAZACAST to water to achieve a final concentration of the active ingredient of no more than 500 ppb. Multiple applications of IMAZACAST may be made during the annual growth cycle to maintain the desired vegetation response.

**Sago Pondweed.** In dry ditches (drainage and irrigation), sago pondweed may be controlled or growth-suppressed with soil-applied IMAZACAST at 64 to 128 fl ozs/A. In irrigation canals, apply IMAZACAST after draw-down and prior to water recharge.

## TERRESTRIAL USE DIRECTIONS

### RESTRICTIONS:

- The maximum amount of this product that can be applied is 1 gallon (equivalent to 1 pound of active ingredient as the free acid) per acre per year.
- DO NOT exceed 2 applications of this product per year.

IMAZACAST may be applied with ground and aerial equipment including both fixed-wing aircraft and helicopter. Applications may be made using foliar broadcast spray, foliar spot spray, injection (hack and squirt), frill and girdle, cut stump, or basal methods.

### Broadcast Spray Application

DO NOT apply more than 1 gallon of IMAZACAST per acre per year.

### Foliar Spot Application

Apply IMAZACAST as a percent solution, containing up to 5% IMAZACAST by volume.

### Injection (Hack and Squirt), Frill and Girdle, and Cut Stump Application

Treatments may be made using up to 100% IMAZACAST by volume.

### Basal Application

Treatments can be made using up to 25% IMAZACAST by volume. Basal applications require the use of a good emulsion system to maintain IMAZACAST in a stable emulsion with the penetrating agent being used. All foliar applications of IMAZACAST require the use of a spray adjuvant. Refer to Spray Adjuvants section for additional information.

## Managing Off-target Movement

The following information is general guidance for managing and minimizing off-target exposure of this product. Specific use directions in this label may vary from these general guidelines depending on the application method and objectives and should supersede the general information provided below.

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

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

1. The distance of the outermost nozzles on the boom must not exceed  $\frac{3}{4}$  the length of the fixed wingspan or 90% of rotor blade diameter.
2. Nozzles must always point backward parallel with the airstream and never be pointed downward more than 45 degrees.
3. DO NOT apply if wind speed is greater than 10 mph, except when making injection or subsurface applications to water.

Where states have more stringent regulations, they must be observed.

The applicator must be familiar with and take into account the information covered in the following aerial drift reduction advisory information.

## Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see Wind; Temperature and Humidity; and Temperature Inversions).

### Controlling droplet size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - DO NOT exceed the nozzle manufacturer's 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 provides 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.

### Boom Length

For some use patterns, reducing the effective boom length to less than  $\frac{3}{4}$  of the fixed wingspan or 90% of rotor blade diameter may further reduce drift without reducing swath width.

### **Application Height**

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

### **Swath Adjustment**

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

### **Wind**

Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application must be avoided below 2 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**

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

### **Sensitive Areas**

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

To the extent consistent with the applicable law, applicator is responsible for any loss or damage which results from spraying IMAZACAST herbicide in a manner other than directed in this label. In addition, applicator must follow all applicable state and local regulations and ordinances in regard to spraying.

IMAZACAST may be used for the control of the following plant species. IMAZACAST may be effective for the control or suppression of additional plant species not listed below. The use of IMAZACAST for the control or suppression of undesirable plants not listed below may be done at the discretion of the user.

To the extent consistent with applicable law, the user assumes responsibility for any lack of control or suppression associated with application to weeds not listed on this label.

## Weeds Controlled

Common Name	Scientific Name	Rate Foliar (fl ozs/A)	Comments
Alligator weed	<i>Alternanthera philoxeroides</i>	64 to 128	Add an aquatic glyphosate herbicide for quicker brownout. See tank mix partner label for rates.***
Annual ryegrass	<i>Lolium multiflorum</i>	16 to 32	
Artichoke, Jerusalem	<i>Helianthus tuberosus</i>	64 to 128	
Bedstraw	<i>Galium aparine</i>	64 to 128	
Beet, wild	<i>Beta procumbens</i>	64 to 128	
Brazilian pepper* Christmasberry*	<i>Schinus terebinthifolius</i>	96 to 128	Also apply using 2% to 5% IMAZACAST per spray volume.
Buckwheat, wild	<i>Polygonum convolvulus</i>	64 to 128	
Buttercup	<i>Ranunculus</i> spp.	64 to 128	
California bulrush*	<i>Schoenoplectus californicus</i>	64 to 128	
Camphor tree*	<i>Cinnamomum camphora</i>	2% to 5% v/v	
Canola, volunteer (non-Clearfield®)	<i>Brassica campestris</i> <i>Brassica napus</i>	64 to 128	
Cattail	<i>Typha</i> spp.	32 to 64	
Chickweed, common	<i>Stellaria media</i>	64 to 128	
Chinese tallowtree Popcorn tree	<i>Sapium sebiferum</i>	64 to 128	See Special Weed Control section.
Cocklebur, common	<i>Xanthium strumarium</i>	64 to 128	
Filaree, redstem Filaree, whitestem	<i>Erodium cicutarium</i> <i>Erodium moschatum</i>	64 to 128	
Flixweed	<i>Descurainia sophia</i>	64 to 128	
Giant ragweed**	<i>Ambrosia trifida</i>	32 to 64	
Henbit	<i>Lamium amplexicaule</i>	64 to 128	
Jamaican nightshade*	<i>Solanum jamaicense</i>	2% to 5% v/v	
Japanese stiltgrass	<i>Microstegium vimineum</i>	32 to 64	Use MSO at 1 % by spray volume. IMAZACAST will provide some residual control of subsequent seedling emergence.
Jimsonweed	<i>Datura stramonium</i>	64 to 128	

(continued)

## Weeds Controlled (cont.)

Common Name	Scientific Name	Rate Foliar (fl ozs/A)	Comments
Johnsongrass, rhizome Johnsongrass, seedling	<i>Sorghum halepense</i>	32 to 64 16 to 32	
Knotweed, prostrate	<i>Polygonum aviculare</i>	64 to 128	
Kochia	<i>Kochia scoparia</i>	64 to 128	
Lambsquarters, common	<i>Chenopodium album</i>	64 to 128	
Lettuce, miner's	<i>Montia perfoliata</i>	64 to 128	
Mallow, common Mallow, enice	<i>Malva neglecta</i> <i>Hibiscus trionum</i>	64 to 128	
Mustard spp.	<i>Brassica spp.</i>	64 to 128	
Nettle, burning	<i>Urtica urens</i>	64 to 128	
Nettleleaf goosefoot	<i>Chenopodium murale</i>	64 to 128	
Nightshade, black Nightshade, Eastern black Nightshade, hairy	<i>Solanum nigrum</i> <i>Solanum ptycanthum</i> <i>Solanum sarrachoides</i>	64 to 128	
Old World climbing fejm*	<i>Lygodium microphyllum</i>	5% v/v	
Pennycress, field	<i>Thlaspi arvense</i>	64 to 128	
Phragmites*	<i>Phragmites australis</i>	64 to 128	Use 1 qt/A methylated seed oil (MSO); apply in late vegetative stage up to killing frost. Also apply as a spot treatment using 1 % to 2% IMAZACAST herbicide per spray volume. Older stands of phragmites and stands growing in water may be more difficult to control and will require follow-up applications.
Pigweed, prostrate Pigweed, redroot Pigweed, smooth Pigweed, spiny	<i>Amaranthus blitoides</i> <i>Amaranthus retroflexus</i> <i>Amaranthus hybridus</i> <i>Amaranthus spinosus</i>	64 to 128	
Puncturevine	<i>Tribulus terrestris</i>	64 to 128	
Purple loosestrife*	<i>Lythrum salicaria</i>	32 to 64	
Purslane, common	<i>Portulaca oleracea</i>	64 to 128	
Radish, wild	<i>Raphanus raphanistrum</i>	64 to 128	

(continued)



## Weeds Controlled (cont.)

Common Name	Scientific Name	Rate Foliar (fl ozs/A)	Comments
Ragweed, common Ragweed, giant	<i>Ambrosia artemisiifolia</i> <i>Ambrosia trifida</i>	64 to 128	
Rocket, London Rocket, yellow	<i>Sisymbrium irio</i> <i>Barbarea vulgaris</i>	64 to 128	
Saltcedar*	<i>Tamarix spp.</i>	64 to 128	Also apply using 2% to 5% IMAZACAST and 1% MSO per spray volume.
Sedge*, purple Sedge*, yellow	<i>Cyperus rotundus</i> <i>Cyperus esculentus</i>	32 to 64	Also apply using 2% to 5% IMAZACAST per spray volume.
Shepherd's-purse	<i>Capsella bursa-pastoris</i>	64 to 128	
Smartweed, ladysthumb Smartweed, Pennsylvania Smartweed, swamp	<i>Polygonum persicaria</i> <i>Polygonum pensylvanicum</i> <i>Polygonum coccineum</i>	64 to 128	
Spike rush*	<i>Eleocharis spp.</i>	64 to 128	
Spurge, prostrate	<i>Euphorbia maculata</i>	64 to 128	
Sunflower, common	<i>Helianthus annuus</i>	64 to 128	
Swinecress	<i>Coronopus didymus</i>	64 to 128	
Tansymustard, green	<i>Descurainia pinnata</i>	64 to 128	
Taro	<i>Taro spp.</i>	64 to 128 5% v/v	
Thistle, Russian	<i>Salsola iberica</i>	64 to 128	
Tropical soda-applet	<i>Solanum viarum</i>	2% to-5%- v/v	
Umbrella plant	<i>Cyperus involucreatus</i>	64	Apply with MSO or COC. Also apply as a sjot treatment using 5% IMAZACAST herbicide per spray volume.
Water primrose	<i>Ludwigia spp.</i>	32 to 64	Add an aquatic glyphosate herbicide for quicker brownout. See tank mix partner label for rates.***
Wetland nightshade*	<i>Solanum tampicense</i> -	2% to 5% v/v	
Whitetop* Hoary cress*	<i>Cardaria draba</i>	8 to 16	
Willoweed panicle	<i>Epilobium brachycarpum</i>	64 to 128	

(continued)

## Weeds Controlled (cont.)

Common Name	Scientific Name	Rate Foliar (fl ozs/A)	Comments
Velvetleaf	<i>Abutilon theophrasti</i>	64 to 128	
<p>* Use not permitted in California unless otherwise directed by supplemental labeling.  ** Suppression of larger, well-established plants  *** It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.</p>			

In general, the use of methylated seed oil (MSO) at 1 % v/v will provide the best control with foliar applications.

### Special Weed Control - Chinese Tallowtree

IMAZACAST at 64 to 128 fl ozs/A or 0.5 to 2.0% v/v may be applied as a foliar application for selective control of Chinese tallowtree in and around tolerant tree species. Control Chinese tallowtree with foliar applications using aerial, handgun, or backpack application methods. When treating Chinese tallowtree, ensure that application method and spray volume provide adequate coverage of targeted Chinese tallowtree plants. Add methylated seed oil at 32 fl ozs/A for broadcast applications, or at 1% v/v for spot backpack and handgun applications. Tolerant hardwood species may exhibit varying degrees of leaf discoloration and temporary injury.

### Areas that may be Grazed or Cut for Hay

Apply IMAZACAST to listed aquatic and terrestrial noncrop sites that may be grazed or cut for hay at a maximum use rate of 1 gallon per acre of IMAZACAST or 5% (v/v) spray solution for spot treatments. There are no grazing or haying restrictions.

## CONDITIONS OF SALE AND WARRANTY

The Directions for Use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, 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 weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of ALBAUGH, LLC or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

ALBAUGH, LLC warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the inherent risks, referred to above.

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