

Where Weeds
and Water Meet

AquaMaster™ Keeps Weeds at Bay

AQUAMASTER™
Herbicide by Monsanto

Anywhere weeds and water meet, there's a strong chance that vegetation management problems will grow like weeds. And anyone who manages aquatic areas knows that when weeds are left unchecked, they can create hard-to-resolve problems:



Unmatched Weed Control

AquaMaster is a non-selective aquatic herbicide that controls emerged vegetation in and around all bodies of fresh and salt water, whether the waters are flowing or stagnant.

- **Block water channels.** Light infestations of emerged weeds can spread rapidly. Weeds can obstruct boat traffic, hinder irrigation and lead to silt buildup.
- **Breed health hazards.** Unmanaged aquatic sites can become breeding sites for insects, such as mosquitoes. Weeds can impede conventional insect control methods.
- **Become unsightly and unpleasant.** Weeds simply make water less enjoyable, from decaying plant odor to reduced property values to decreased shoreline access.
- **Obstruct sight lines.** Emerged weeds can obstruct sight distances along roads, reducing motorist safety.
- **Challenge weed management.** Emerged weeds tend to thrive in areas that are difficult to reach using mechanical or physical control methods.

AquaMaster Surfaces as Top Choice

AquaMaster herbicide solves weed problems with convenient, broad-spectrum control. AquaMaster is an excellent fit for golf courses, residential and commercial areas and in municipalities, roadside areas and irrigation districts.

AquaMaster works in most aquatic settings better than other options because of its application flexibility.



AquaMaster is effective in lakes, rivers, streams, ponds, seeps, irrigation and drainage ditches, canals, reservoirs and similar sites.

AquaMaster is highly effective on more than 190 species of emerged weeds, including a wide range of annual and perennial grasses, broadleaf weeds and sedges. No other herbicide can surpass that performance on so many emerged weeds, and at the same time virtually eliminate the need for mechanical or physical control methods.

Where some herbicides may provide only a temporary burndown of top vegetation, AquaMaster is absorbed by plant foliage and moves throughout plant tissues to control the entire plant, from leaf tips to roots. The active ingredient in AquaMaster interrupts the activity of the plant enzyme needed for the production of essential amino acids.

AquaMaster's Flexibility Runs Deep

AquaMaster has a wide range of labeled uses and no water use restrictions, when used according to label directions. Managers have the flexibility to use AquaMaster in public, agricultural, residential or commercial areas—virtually anywhere weeds and water meet, as long as labeled rates and applications are followed.

AquaMaster has proven its success in cost-effectively managing vegetation in and around streams and ditches, and can remove potential litter catching brush in ditch banks without sterilizing the soil. That allows native grasses and wildflowers to grow and helps prevent erosion.

AquaMaster can also reduce weed pulling and string trimmer use, and can maintain sculpted water's edges at golf courses and resorts without heavy equipment or dredging.

Monsanto can meet terrestrial and aquatic weed control needs. Flexibility makes AquaMaster the aquatic tool of choice in your herbicide line-up when it comes to managing industrial, turf and ornamental weed control requirements.

Favorable Environmental Characteristics

AquaMaster's favorable environmental characteristics are well documented in more than 30 years of research involving the active ingredient, glyphosate. In fact, environmental information generated about glyphosate is among the most extensive available for any herbicide on the market today.

Glyphosate, the active ingredient in AquaMaster herbicide, is non-volatile, which eliminates the risk of vapors damaging non-target vegetation. Also, there are no odors to disturb the surrounding public.

After applying AquaMaster according to label directions, there are no restrictions on water use for irrigation, recreation or domestic purposes. Laboratory experiments indicate that glyphosate dissipates readily from water by binding tightly to suspended soil particles, through deposition in bottom sediment and microbial degradation.

Glyphosate has rarely been detected in drinking water, and has never been found at concentrations exceeding the U.S. EPA's drinking water standard. And, since glyphosate dissipates readily in water, crops irrigated with water from areas treated with AquaMaster will not be adversely affected.

Favorable Toxicological Characteristics

Laboratory studies in animals show AquaMaster has favorable toxicological characteristics. No credible evidence exists that glyphosate, the active ingredient, causes cancer, mutations, nerve damage or birth defects. In fact, the U.S. EPA, based on long-term toxicological tests, has classified glyphosate as Category E for evidence of non-carcinogenicity in humans—the most favorable cancer rating for pesticide active ingredients and one that few other products meet.

Results from acute toxicological studies are shown below for AquaMaster. Results of single-exposure oral, dermal and inhalation tests required by the U.S. EPA are expressed by the LD₅₀/LC₅₀¹ values. The smaller the value, the greater the toxicity. The EPA then uses these values to place pesticides into one of four toxicity categories, with I being most toxic, and IV being least toxic. AquaMaster falls into the least toxic category, with its oral and dermal LD₅₀s of >5,000 mg/kg.



Where weeds and water meet, AquaMaster is the choice of aquatic area managers.

Acute Toxicity Data: AquaMaster™ Herbicide

Exposure Route	Species	LD ₅₀ /LC ₅₀ ¹	EPA Category ²	EPA Classification
Oral LD ₅₀	Rat	>5,000 mg/kg	IV	Practically nontoxic
Dermal LD ₅₀	Rabbit	>5,000 mg/kg	IV	Practically nontoxic
Inhalation LC ₅₀	Rat	>4.98 mg/L	IV	Practically nontoxic
Eye Irritation	Rabbit		IV	Essentially non-irritating
Skin Irritation	Rabbit		IV	Essentially non-irritating

(No skin allergy was observed in guinea pigs following repeated skin exposure.)

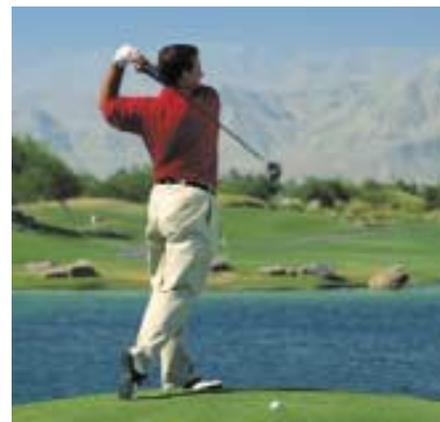
¹ The LD₅₀/LC₅₀ is the dose or concentration that produces 50% mortality in the test organisms.

² The U.S. Environmental Protection Agency has established acute toxicity categories ranging from slight to severe with Category I being severe and Category IV being slight.

For broad-spectrum, responsible and convenient weed control, AquaMaster always surfaces at the top.

Studies on mammals, fish and birds indicate that glyphosate does not bioaccumulate in the food chain. Glyphosate is highly water-soluble and is rapidly eliminated from the body. Test results show it has not been found to accumulate in test species, even after repeated exposure.

AquaMaster and glyphosate have low acute toxicity to aquatic organisms, as shown below. Surfactants that might be mixed with AquaMaster can have low to moderate acute toxicity to aquatic organisms. However, the toxicity and exposure is sufficiently low that there is no significant risk of unreasonable adverse effects to aquatic organisms under normal use conditions.



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Aquatic Toxicity Data: AquaMaster Herbicide and glyphosate

Species, Test Duration	LC ₅₀ or EC ₅₀ ¹ (mg/L)	EPA Classification
AquaMaster herbicide		
Bluegill sunfish, 96-hr LC ₅₀	>1,000	Practically nontoxic
Rainbow trout, 96-hr LC ₅₀	>1,000	Practically nontoxic
<i>Daphnia magna</i> , 48-hr EC ₅₀	930	Practically nontoxic
Green algae, 72-hr (growth) EC ₅₀	166	Practically nontoxic
Glyphosate (active ingredient)		
Sheepshead minnow, 96-hr LC ₅₀	>1,000	Practically nontoxic
Grass shrimp, 96-hr LC ₅₀	281	Practically nontoxic
Mysid shrimp, 96-hr LC ₅₀	>1,000	Practically nontoxic
Sea urchin, 96-hr LC ₅₀	>1,000	Practically nontoxic
Fiddler crab, 96-hr LC ₅₀	934	Practically nontoxic

¹ The EC₅₀ is the concentration that produces effects (inhibition of growth or immobilization) in 50% of the test organisms.

