

Why Vegetation Control is Necessary in Your Community

Weed control in an urban setting is important, not just for aesthetic reasons, but also to protect property and to manage vegetation that can be harmful to people.



Poison ivy and poison oak, for example, have no place in recreational areas or around homes. Roadsides must be kept free of tall weeds so

motorists can have unobstructed views. Weeds along railroads can pose a fire hazard. Thorny bushes can cause painful scratches, and ragweed contributes to hay fever.

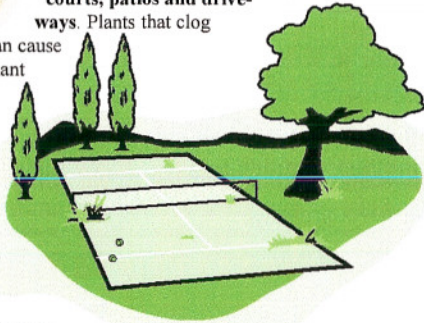
Invasive, non-native plants can



overwhelm

nature parks. Weeds can crack sidewalks, tennis courts, patios and driveways. Plants that clog

drainage areas can cause flooding or stagnant water where mosquitoes can breed. And aquatic plants can diminish the enjoyment of recreational lakes or ponds.



Many communities use integrated vegetation management approaches to control undesirable weeds. This means they choose the right tool or tools for the job. Sometimes a properly applied herbicide is the best tool.



Roundup® herbicide is very effective against most green vegetation, including hard-to-control plants, such as brush, poison oak and thistle.

But it is also the herbicide of choice for use around homes and gardens. AquaMaster® aquatic herbicide is very effective in controlling non-submerged vegetation in and around lakes, streams and ponds.

In the vast majority of urban uses, Roundup and AquaMaster are applied in a diluted spray that is more than 98 percent water.

Health and Safety Information

More than 1,000 studies relating to the health, safety and environmental effects of glyphosate, the active ingredient in Roundup and AquaMaster have been conducted. AquaMaster contains only glyphosate and water. Roundup has an added surfactant, which is similar to those used in household dishwashing liquids.

The U.S. Environmental Protection Agency, before registering the active ingredient for use, reviewed extensive toxicological and environmental data. The agency classifies glyphosate as "practically non-toxic" (the most favorable category possible) based on single-exposure oral, dermal and inhalation studies. Furthermore, based on lifetime feeding studies with laboratory animals, EPA has placed glyphosate in Category E, (evidence of non-carcinogenicity for humans.) (1)

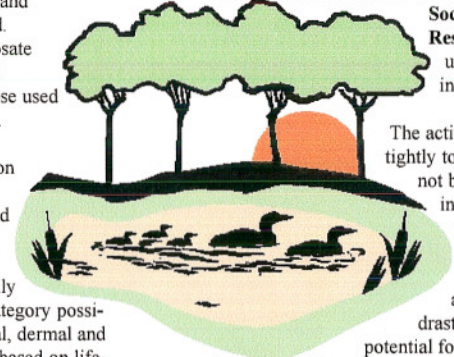
By law, all herbicides must include a signal word (CAUTION, WARNING or DANGER) on their label. Roundup and AquaMaster labels contain the CAUTION signal word, indicating least concern.

The surfactant in Roundup is on EPA's list of approved inert ingredients. The World Health Organization (2) and an expert panel of toxicologists (3) reached similar conclusions after reviewing extensive data.

The EPA-approved label for urban and residential uses of Roundup states that people and pets can return to a sprayed area after the herbicide has dried. This advisory is not included as a health precaution, but is intended to prevent the tracking of wet herbicide onto desirable vegetation.

Environmental Characteristics

Roundup and AquaMaster have been widely used by organizations such as Quail Unlimited, Ducks Unlimited, The Nature Conservancy and the Society for Ecological Restoration to remove unwanted vegetation in wildlife habitats.



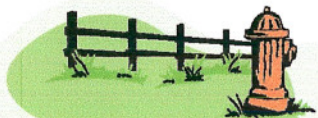
The active ingredient binds tightly to soil particles. It does not build up in the soil, but in fact is degraded over time by soil microbes into naturally occurring substances, such as carbon dioxide. This drastically reduces the potential for groundwater contamination. EPA has approved AquaMaster for application directly onto aquatic vegetation.

Hundreds of studies relating to the safety of glyphosate and glyphosate formulations to wildlife and the environment have been conducted, including two major long-term ecosystem studies. (4), (5) These studies with birds, mammals, beneficial insects, soil organisms and aquatic organisms provide conclusive evidence that proper use of Roundup and AquaMaster will not cause any unreasonable adverse effects on the environment, including wildlife. (6)



Integrated Vegetation Management Systems

When vegetation managers consider which tools to use, they consider many factors. Worker safety, efficacy, cost and practicality are all important. Roundup is effective in **hard-to-reach areas**, such as along **fences, or around fire hydrants or trees**, which can be damaged by mowers or string trimmers. Steep slopes pose a risk of tractors or mowers turning over, but herbicides can be directed to such areas. Mulching can help prevent the growth of weeds, but if weeds eventually pop through the mulch, Roundup may be more practical than hand-weeding or string trimmers.



Sometimes the sheer magnitude of the weed problem requires an effective herbicide, as in cases where invasive vegetation takes over a park or wildlife area. Mowing cuts down weeds, but they will grow back. When Roundup and AquaMaster are applied to green vegetation, the active ingredient moves through the plant and destroys the root so the plant cannot grow back. And because it is not herbicidally active in soil, it is possible to replant some desirable vegetation as soon as one day after application.

What Others Have Said

"The National Coalition Against the Misuse of Pesticides notes that the glyphosate molecule on which Roundup is based is not on the group's list of harmful chemicals. In fact, the Charles Darwin Institute, a group that watches out for the protection of endangered species, went with Roundup to clear the weeds choking off the island habitat of the giant Galapagos turtles."

-- Wall Street Journal, Jan. 2, 1996, news article.

"Glyphosate has been used extensively to control aquatic weeds and restore ecosystems... During this period of use, there have been no documented cases of adverse effects on fish or aquatic invertebrates associated with glyphosate use for this purpose." (6)



For More Information...

Monsanto, the manufacturer of Roundup and AquaMaster herbicides, encourages the public to become more knowledgeable about our products. More information can be obtained by visiting our website: www.monsanto.com or by calling 1-800-332-3111.

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Roundup and AquaMaster are registered trademarks of Monsanto Technology LLC.

Always read and follow label directions.

- (1) U.S. EPA, (1993) Re-registration Eligibility Decision: Glyphosate.
- (2) WHO, (1994) Glyphosate. Environmental Health Criteria No 159.
- (3) "Safety Evaluation and Risk Assessment of the Herbicide Roundup and Its Active Ingredient, Glyphosate, for Humans," by Gary M. Williams, Robert Kroes, and Ian C. Munro, *Regulatory Toxicology and Pharmacology*, Vol. 31, No. 2/1, pp. 117-165, April 2000.
- (4) Forest Pest Management Institute, Proceedings of the Carnation Creek Herbicide Workshop (Sault Ste. Marie, Ontario, Ministry of Forests, Research Branch, 1989)
- (5) "Fate of Glyphosate in an Oregon Forest Ecosystem," by Newton, M., Howard, K.M., Kelpsas, B.R., Danhaus, R. Lottman, C.M. and Dubelman, S. 1984. *Journal of Agricultural and Food Chemistry*, 32:1144
- (6) "Ecotoxicological Risk Assessment for Roundup Herbicide," by John P. Giesy, Stuart Dobson, and Keith R. Solomon. Published in *Reviews of Environmental Contamination and Toxicology*, Volume 167, pp. 35-120, 2000.

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