



INTEGRATED PEST MANAGEMENT PRESCRIPTION

Western water hemlock (*Cicuta douglasii*)

Description:

Western water hemlock is a perennial plant in the parsley and carrot family that grows in wet areas of meadows, pastures, and streams. It has small white flowers that grow in umbrella-like clusters which each produce two seeds. The brown kidney-shaped seeds develop late in June and are dispersed mostly by wind and water. The compound leaves are; alternate, have jagged edges, and are about two inches long and 3/4 inch wide. It is distinguished from water parsley by the leaf veins - water hemlock's leaf veins go from the mid-rib to the base of the notches on the leaf margin. In Thurston County, water hemlock grows about three feet tall.

Western water hemlock has a bulb-like rootstalk that contains several hollow chambers and produces a highly poisonous oil (cicutoxin) that has a strong carrot odor. When the rootstalk is broken, the oil is exposed to air and turns bright yellow-orange. Off the rootstalk grows thick root tubers and other slender, hairy roots.

Impacts:

Water hemlock is the most toxic plant native to North America. Only a small amount of the toxic oil from the plant is needed to produce poisoning in livestock or humans. The roots are the most toxic part, but the green seed heads are also highly poisonous. The leaves and stems are poisonous in the early stages of growth, but lose much of their toxicity when mature.

Livestock usually show signs of poisoning fifteen minutes to six hours after they eat the plant. Symptoms include: muscle twitch, rapid pulse, rapid breathing, tremors, convulsions, excessive salivation or frothing at the mouth, and dilation of the pupils. Cattle poisonings from water hemlock are frequently reported and severe poisoning can result in death. Although human deaths from water hemlock poisoning are relatively infrequent, five deaths occurred from 1979 to 1988 and poisoning still continues to occur.



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Control Options:

Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The goal of Thurston County is to minimize the use of pesticides by utilizing and providing information about the most effective control options that are available and practical.

► Cultural / Habitat

It is important to remove or otherwise control infestations of water hemlock and prevent them from producing seed. Also, have livestock, machinery, vehicles and children avoid infested areas to limit the spread of seed and root. Inspect wet pastures, meadows and stream banks a couple times through the growing season, and control infestations as soon as they are discovered.

► Manual / Mechanical

Wear gloves and protective clothing when handling these plants. If you get any part of the plants on your skin, wash immediately with soap and water. Hand digging when the ground is wet is an effective and relatively easy method of removing water hemlock. The roots must be entirely removed because new plants can grow from pieces of the rootstalk, and because they are attractive to grazing livestock. Carefully gather all plant pieces and dispose of them in the garbage. If plants and roots are grubbed out of areas with standing water, animals should be excluded from the area to prevent them from drinking the contaminated water.

► Biological

There are currently no biological control methods available for water hemlock.



► Chemical

Water hemlock is a perennial that grows and can reproduce from its roots, so it is important to use a systemic herbicide that will move into the root system and kill the entire plant. Currently, the active ingredient glyphosate is the only systemic herbicide active ingredient that is effective for water hemlock control and is considered “low in hazard” by Thurston County’s pesticide review process. **Glyphosate** is non-selective and will injure any plant that it contacts.

Spot treatment applications with a product that is mixed to a 2% glyphosate concentration are recommended for western water hemlock control. Many herbicide products have an initial glyphosate concentration of 41% (example: Roundup Pro®, Glyphos®, etc.), follow the label directions to dilute to 2% concentration. Pre-mixed, ready to use glyphosate products may not contain enough active ingredient to control water hemlock. Use a hand-held or backpack sprayer to spray the plants until they are wet but not dripping.

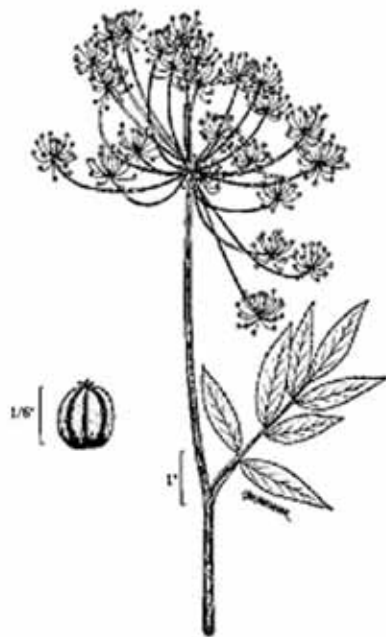
Herbicides containing the active ingredient **imazapyr** (Habitat®, Arsenal®, etc.) are very effective in the control of water hemlock. Thurston County considers imazapyr “moderate in hazard” due to its potential for mobility and persistence. Products containing imazapyr are best suited for large areas and are not available for use in residential settings, check the product label to ensure that area you want to use it is listed. Imazapyr is also non-selective and may damage any plant it comes into contact with.

Herbicide spraying within 50 feet of a water body requires the use of an aquatic herbicide. Water hemlock is usually found growing near water bodies so, aquatic herbicides containing **glyphosate** and **imazapyr** are recommended. Use of aquatic herbicides in Washington State is restricted to WSDA licensed applicators.

BE AWARE! Spraying may cause the stems and leaves of water hemlock to become more attractive to grazing animals. Livestock should be excluded from sprayed areas for a minimum of three weeks.



Cicuta douglasii
Western Water Hemlock
Photo by Robyn Klein



USDA-NRCS PLANTS Database / USDA NRCS.
Wetland flora: Field office illustrated guide to plant species.

Timing:

Manual control should be done in the spring when plants are identified and the ground is still moist enough to pull them out with the rootstalks and tubers intact. Spraying should be done when plants are bolting to early bloom (late May to mid June) to allow sufficient leaf surface area, but should be done before plants produce mature seed.

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. Obey all label precautions and safety measures. Always use personal protective equipment that includes coveralls, waterproof gloves, shoes plus socks, and protective eyewear. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names. Information provided is current as of the date of the prescription. Pesticide product registration is renewed annually and product names and formulations may vary from year to year.

REFERENCES:

Government of British Columbia, Ministry of Agriculture and Land, Pest Management Fact Sheet for Western Water Hemlock (*Cicuta douglasii*).

University of Nevada, Reno, Cooperative Extension, Fact Sheet-04-09, Managing Poison and Western Water Hemlocks.

Water Hemlock Toxicoses in Sheep: Pathologic Description and Prevention of Lesions and Death. *J Vet Diagn Invest* 8:474-480, 1996.

USDA Agricultural Research Service, Agricultural Research Services. Poisonous Plant Research Products and Services, Water hemlock (*Cicuta douglasii*). 2/7/2006.



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