

Western Water Hemlock (*Cicuta douglasii*) is a wetland plant that is native to the intermountain region. It may be confused with poison hemlock, but causes a different type of poisoning and is considered one of the most poisonous plants in North America.

Western water hemlock, of the parsley family, is a highly poisonous perennial. Its stems are erect, 3 to 7 feet tall, and usually enlarged at the base. The alternate, pinnate leaves have a toothed margin (Fig. 2). A distinguishing characteristic is the leaf veins that terminate at the bottom of leaf serrations, and not at the tips.

Like poison hemlock, western water hemlock's flowers are white and grouped in umbrella-shaped clusters (Fig. 3).

Likewise, each flower is two-seeded. The tea-colored seeds are somewhat kidney-shaped with corky ridges.



Fig. 2 *Photo: Western water hemlock leaves have veins that terminate in the bottom of serrations*

The most recognizable feature of western

water hemlock is its thick, tuberous rootstalk that contains many small chambers (Fig. 4). These chambers hold a highly poisonous brown or straw-colored liquid that is released when the stem is broken or cut. Thick, fleshy tubers and slender individual roots grow from the bottom of the main rootstalk.

Western water hemlock is often confused for the edible water parsnip. The easiest way to distinguish between these species is by western water hemlock's distinct root system. In addition, the leaves of water parsnip end at the leaf tips, and its flowers have bracts.

Habitat

Western water hemlock is a wetland plant especially common on pastures or tilled areas. It can also be found along streams and irrigation canals. Its establishment on rangeland is limited due to its high water requirement. This plant occurs in wet, fertile soils at the edge of waters. It is most common in deep loam, clay loam, or clay soils.

Figure 3 Photo: Western water hemlock has umbrella-shaped clusters of white flowers.



Western water hemlock is deemed the most violently toxic plant in North America. Only a small amount of the toxic substance is needed to cause poisoning in livestock and humans. The toxic substance in the plant is cicutoxin, an unsaturated alcohol that has a strong carrot-like odor. The roots are the most toxic part. The leaves and stems are poisonous in the early stages of growth, but lose much of their toxicity when mature. The green seed heads are also highly poisonous. Sheep that consume it do not seem to be as affected as cattle.

Signs of poisoning can occur 15 minutes to 6 hours after the plant is consumed. Symptoms include: muscle twitch, rapid pulse, rapid breathing, tremors, convulsions, excessive salivation or frothing at the mouth, and dilation of the pupils. Animals will eat western water hemlock in the spring and graze on the green

seed heads later in the season.

Only a small amount of the toxic substance in the plant is needed to produce poisoning in livestock or in humans. The toxin cicutoxin, acting directly on the central nervous

system, is a violent convulsant.



Figure 4. The roots of western water hemlock are the most poisonous part of the plant.

Clinical signs of poisoning occur when a threshold dose is reached after which grand mal seizures and death occur.

Water hemlock has small, white flowers that grow in umbrella like clusters. Side veins of the leaves lead to notches, not to tips at the outer margin. The thick rootstalk of water hemlock contains a number of small chambers. These hold a highly poisonous brown or straw-colored liquid that is released when the stem is broken or cut. Thick, fleshy tubers and slender individual roots grow from the bottom of the rootstalk. Water hemlock grows in wet seepage areas of meadows, pastures, and in streams. It reaches a height of 0.5 to 1.0 meters. The plant is a perennial in the carrot family. Water hemlock has small, white flowers that grow in umbrella-like clusters.

It has also been confused with wild parsnips, other herbs, and medicinal plants. In cases of water hemlock poisoning in humans, contact a poison control center and obtain emergency medical assistance as quickly as possible. Poisoning results in severe seizures and convulsions that must be controlled to preserve normal ventilation and cardiovascular function.

The rootstalk contains small chambers that hold a highly poisonous brown or straw-colored liquid that is released when the root is broken or split. Everything that the liquid touches becomes a potential source of poisoning.

Animals will eat water hemlock early in spring and graze on the green seed heads later in the season. The roots; however, are more palatable and animals have been poisoned when the roots are exposed by plowing or cleaning ditches or when animal tramp in the streambeds. The underground portions of the plant, especially the tuberous roots, are highly toxic and very dangerous. Green seed heads have caused death losses in cattle.

The toxin is found principally in the tubers, but is also present in the leaves and stems during early growth. Leaves and stems lose most of their toxicity as they mature; however, green seed heads are poisonous.

Where and When It Grows

Water hemlock, a wetland plant, is commonly found in wet meadows and pastures and along the banks of streams. It starts growing in the spring. In the higher elevations, water hemlock flowers in June or July.

How It Affects Livestock

Livestock usually show signs of poisoning 15 minutes to 6 hours after they eat the plant; they may die within 15 minutes to 2 hours after signs appear. Cicutoxin is a

severe convulsant and most animals die as a result of the asphyxia and cardiovascular collapse that occurs during the convulsions.

Signs and Lesions of Poisoning

Nervousness

Excessive salivation and frothing

Muscle twitching

Dilation of the pupils

Rapid pulse

Rapid breathing

Tremors

Violent convulsions, grand mal seizures

Coma

Death may occur as early as 15 minutes after a lethal dose is consumed

Skeletal and cardiac myofiber degeneration and necrosis

How to Reduce Losses

The toxic substances act so rapidly that an affected animal can seldom be saved. Treatment consists of preventing seizures with barbiturates or tranquilizers and supporting respiration. Gastric lavage, activated charcoal, or saline cathartic may be helpful.

To reduce losses, keep animals away from places where water hemlock grows. The stems and leaves of water hemlock increase in palatability immediately after being sprayed with herbicide. Therefore, keep animals away from treated plants for 3 weeks after spraying. Most losses occur early in the spring or after the plants have been sprayed with 2,4-D.

The plants, which usually grow in small patches, are easy to locate. Spraying or grubbing can eradicate them. Actively growing plants can be controlled with 2,4-D applied at the rate of 1 kg per acre of acid equivalent. Repeat spray treatments until eradication is completed. Follow all precautions for handling herbicides. If you grub out water hemlock, be sure to wear gloves and get all of the plant, including roots. Gather and burn every part.