



# Water Hemlock



*Usually found in moist, open pastures and meadows.*

## Description

*Cicuta maculate L.* Water hemlock is an erect, stout, much-branched, leafy herb that grows up to 7 feet tall, with stems arising from tuberous-thickened roots. The alternately arranged leaves, often 1 foot in length, are bipinnately or tripinnately compound, and have completely separated leaflets. The bases of the leaf stalks clasp the stems. The leaflets are from 1 to 4 inches long, and are linear or lance-ovate, with margins that are usually sharply and coarsely serrate. The primary lateral veins from the midvein are directed to the sinuses. Flowers are disposed in umbrella-like clusters called umbels. The umbels are numerous, 2 to 5 inches wide, and surpass the leafy shoots.

This species can be easily identified by two of its characteristics. (1) The primary lateral veins in the leaflets end in the sinuses or notches between the teeth, not in the tips of the teeth. Secondary or weak veins may branch from the primary veins near the sinuses and end in the teeth, but these veins are readily distinguished from the primary ones. (2) The otherwise hollow central cavity at the base of each stem is crossed by horizontal plants of pith. This characteristic can be seen by slicing the base of the stem lengthwise with a knife.

## Occurrence

Water hemlock grows in swamps, marshes, ditches, and wet depressions in prairies and meadows from Quebec to Minnesota and Manitoba, south to North Carolina, Tennessee, Missouri, Oklahoma, and Texas. It sprouts from the tuberous-thickened roots in early spring, and flowers from June to August.

## Conditions of Poisoning

Water hemlock is one of the most poisonous plants to livestock. The flowers, seeds, and mature leaves are not toxic in either the green or dried state; but a relatively small amount of the tuber, which contains the toxic principle, may fatally poison an animal within less than 1 hour after being consumed. The young sprouts also contain the toxin.



Since the toxic principle is mainly contained in the tuberous roots, poisoning usually occurs in the spring when the soil is moist. In grazing the early growth of the plant, animals, especially cattle, may pull up the roots along with other parts of the plant. After the plants bloom, the quantity of the toxic principle in the roots is decreased.

### Toxic Principles

The toxic principle is cicutoxin, a resinous, thick, yellow liquid with a carrot-like odor. The young leaves are nearly as toxic as the roots. Two ounces of the young leaves, stems, or tubers have been known to fatally poison sheep. Eight to 10 ounces will fatally poison a mature cow or horse. It is estimated that 1 ounce of the tubers will kill a pig.

### Clinical Signs

The toxic principle is irritating, and occasionally pigs will vomit after eating the tubers. In all species, clinical signs develop rapidly. These are salivation, twitching of the muscles, champing of the jaws, grinding of the teeth, and evidence of pain, followed by muscular spasms and convulsions. Running fits and convulsions continue when the animal is re-cumbent. The body temperature may be elevated, resulting in coma. Death is caused by respiratory paralysis and asphyxia and may occur within 30 minutes after ingestion of the plant. In general, the clinical signs produced by this toxin are similar to those produced by picrotoxin.

### Necropsy

Congestion and hemorrhage in the viscera, enteritis, and yellow discoloration of the fat are found in chronic poisoning. Acutely poisoned animals may not show any characteristic lesions.

### Treatment

A central-nervous-system depressant is used to overcome the stimulant effect of cicutoxin. If the poisoned animal survives for 5 to 6 hours, it will usually recover and show no further effect from the toxins.

### References

Evers, Robert A., and Roger P. Link. Poisonous Plants of the Midwest and Their Effects on Livestock, 1972. Special Publication 24, College of Agriculture, University of Illinois at Urbana-Champaign.



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