

Giant Hogweed Control in BC



Giant hogweed (*Heracleum mantegazzianum*) is an invasive, alien plant that originates from the Caucasus Mountains in west central Asia where it grows in subalpine meadows and forest edges. It is sometimes confused with two native plants - Cow parsnip (*Heracleum maximum*) and Palmate coltsfoot (*Petasites frigidus*). Giant hogweed grows well in full or partial shade along streamside areas, moist forests and meadows.

Giant hogweed is identified by its large size (2–5 meters tall), large deeply incised and pointed compound leaves (up to 3 meters wide), large flat-topped, umbrella-shaped white flower clusters (up to 1 meter in diameter) and hollow stems with dark red-purple spots.

A. Background

- Giant hogweed disperses and establishes by seed. Pieces of roots, leaves, and stems do not re-sprout like Japanese knotweed or English ivy. Seeds are moved by wind (1 to 4 meters) or longer distances by water along streams, ditches, or storm pipes. Each plant can produce up to 120,000 seeds, but more typically, several thousand.
- The establishment of new populations over longer distances usually occurs as a result of human activities. Gardeners sometimes grow Giant hogweed as a novelty plant because of its size. Soil contaminated with residual seed can be moved as road fill or for other construction activities. This results in the establishment of new populations. Some small roadside populations have established from seeds blowing from trucks during transport of cut plants or seed heads.
- Giant hogweed grows for 3–5 years before flowering and dying in the last year. During the first years of growth, it stores increasing amounts of energy in its roots to subsequently develop its flower stalk, flowers, and seeds. Many established populations consist of plants of varying ages - small first year plants, larger older plants, and fourth or fifth year plants in flower.
- Repeatedly cutting the flower stalk at ground level can be used to kill Giant hogweed. However, it often it develops a secondary flower stalk and umbel (flower head). Removing the seed head in the summer (June 30–July 15) can prevent the production and dispersal of new seeds which is sometimes a useful short-term control technique.
- Giant hogweed seeds may remain in the ground more than five years, but most seeds germinate in the first two years. Control efforts must include site monitoring to prevent re-establishment from seeds in the soil.

B. Health and Safety Issues

Giant hogweed sap contains chemicals which can cause severe dermatitis (welts, rashes, and blistering, followed by pigmented scarring) when it contacts skin in the presence of sunlight (i.e. phytophotodermatitis). Scarring may persist for as long as six years. Toxic sap is found in the leaves, stems, flowers, and roots of Giant hogweed, as well as in other plants in the Carrot Family, but not to nearly the same extent as with Giant hogweed. Contact with sap can occur by brushing against any broken plant parts, handling plant material, or even by touching tools or mowing equipment that was used for Giant hogweed control.

Recommendations to minimize risk of dermatitis when undertaking control activities:

1. Wear protective clothing that covers all exposed skin and eyes when handling Giant hogweed. This includes rubber gloves, rubberized raingear, and a facemask or safety goggles. Wear sun block on your face. Work should proceed on cloudy days, if possible. See Worksafe BC's website for more information: <http://www2.worksafebc.com/Publications/Multimedia/Videos.asp?ReportID=34980>
2. Use control techniques that minimize generation, dispersal, and contact with plant sap e.g. use long-handled tools. Do not use a brush cutter or mower (unless you have proper training and safety equipment because they can spray sap onto exposed skin).
3. If you are exposed to Giant hogweed sap:
 - wash affected skin with soap and water or use stream water if you are in a remote area
 - cover affected area with clean, long-sleeved shirt or pants and keep area out of sunlight for 48 hours. If darkening of skin occurs, consult a doctor
 - flush eyes immediately for 1 minute if they are potentially affected; put on sunglasses and see doctor immediately
4. After completion of work:
 - Thoroughly wash gloves, raingear or coveralls and boots *prior* to removing clothing, using soap if possible. Be careful not to redistribute plant sap when washing clothing or equipment
 - Carefully remove gloves, coveralls and boots by turning protective clothing inside out while removing, to ensure any portions of clothing that were exposed to hogweed sap will not accidentally come into contact with skin
 - Wash hands with soap and water, remove goggles
 - Disposable coveralls and gloves should be disposed of after use, any non-disposable clothing should be washed carefully with soap and water
 - Wash tools that have been in contact with plant sap

C. Control Methods – the aim is to deplete the seed bank in the soil

1. Taproot Cutting - for small groups (<100) of plants

Giant hogweed has a large, deep taproot that stores energy for annual growth or flowering and provides a buffer against damage to the above-ground parts of the plant from mowing or browsing. The taproot can be 45 cm long (1.5') and 12 cm (5") thick. Giant hogweed can rapidly re-sprout new leaves or a flower stalk after cutting.

Method:

- Using loppers, cut back the upper portions of larger plants to allow easier access to cut the stem and taproot.
- Using a sharp, long-handled narrow shovel or spade, sever the root about 10 to 15 cm (4" to 6") below the soil surface. Treat all plants, not just the large ones. Smaller plants can be pulled. Lee Valley sells such a tool. See Item G: <http://www.leevalley.com/en/garden/page.aspx?p=56798&cat=2,64944&ap=1>
- Leave above-ground plant parts on-site to decompose, unless there is risk that people will touch them.
- Undertake first taproot cutting in early spring (April 1–May 15) and a second round in early-summer (June 15–July 15) to treat any plants that were missed or have re-sprouted.
- Monitor the site annually for 3–5 years around June 15 to ensure that new seedlings are identified and removed (root cut).

2. Repeated Mowing - for large, flat sites

Repeatedly cut all above-ground plant parts during the growing season using a tractor-based mower (not a brush-cutter) to reduce the possibility of contact with plant sap. Start April 1st each year and continue every three weeks throughout the summer and fall, until mid-November or until the first frost. Multiple years of mowing may be required depending on how well developed the seed bank is and other factors.

3. Diluted Herbicide Application

Diluted glyphosate (e.g. Roundup) can be applied directly (1) onto leaf surfaces using a simple paint brush, (2) inserted into a single stem of a Giant hogweed plant using a stem injection tool, or (3) inserted into a cut stem.

Painting Leaf Surfaces

- Dilute a glyphosate formulation to 2% active ingredient
- Carefully paint formulation onto all leaf surfaces, being careful to avoid dripping onto the ground or adjacent non-target plants

Stem injection

- Inject only one stem per plant, 30 cm (1 foot) above ground with 5 ml (or cc's) of a 5% glyphosate solution
- Stem injector kits may be purchased from JK International's website: <http://www.jkinjectiontools.com/>

Cut Stem

- Dilute glyphosate with water down to 5% active ingredient
- Cut one stem per plant and using a large plastic syringe (with the needle removed) or turkey baster inject the hollow stem with 5 ml (or cc's) of a 5% solution.

Special Conditions

- a. On public lands, applicators must have received Pesticide Applicator Certificate training and operate under the auspices of a plan or license e.g. Pest Management Plan (PMP) or Pesticide Use Licence (PUL). Both are issued by the BC Ministry of Environment.
- b. Herbicide application is most effective in early spring (March 15–May 15) when plants have reached a height of 20–50 cm.
- c. Read and follow all label directions and restrictions, and obey all label precautions and safety measures.
- d. Giant hogweed can be treated with glyphosate using the above application methods down to within 1 meter of the high water mark (HWM) of a stream channel or wetland. Manually treat (e.g. sever tap root) any portions of the plant below the 1 meter of HWM.
- e. A follow-up application is usually required during the first growing season (June) and sites should be visited at least twice during the first treatment season.
- f. Glyphosate is a “non-selective” herbicide, meaning it kills both target (i.e., giant hogweed) and non-target plants, therefore foliar spraying is not recommended, unless by a trained, certified applicator.

4. Umbel Removal Only

The removal of flowering heads in early to late summer (June 30–September 15) is a short-term, stopgap method for preventing further seed dispersal (i.e. when it is too late in the season to employ other techniques). It does not kill the plant.

- Using a long-handled scythe, pull the blade towards yourself to cut the stem in an upward direction at ground level (note that cutting straight across the stem does not work well).
- A fully protected second person can gently hold the stem and direct the umbel into a large, heavy-duty garbage bag, ensuring that all seeds go into the bag with the umbel.
- Use the scythe to cut the stem again so that the umbel is severed from the stem and the whole umbel can fit entirely into the bag.
- Cut the rest of the stalk into pieces that will also fit into the bag.
- Seal the bag and send to landfill – *not* to compost or green waste systems.
- Workers should spread out for safety reasons.

D. Equipment List

- ✓ Long pants and long-sleeved shirt
- ✓ Waterproof or disposable coveralls or rain gear (pants and jacket with hood)
- ✓ Heavy rubber gloves or other waterproof gloves that can be discarded after use (e.g. dishwashing gloves)
- ✓ Rubber boots
- ✓ Water source (for cleaning gloves and clothes)
- ✓ Eyewash station
- ✓ Hand soap
- ✓ Sunglasses that blocks UV light
- ✓ Sunblock (applied to face, hands and wrists)
- ✓ Goggles
- ✓ High visibility safety vests, if working along roadways
- ✓ Narrow-bladed shovels with long handles
- ✓ Loppers
- ✓ Large plastic garbage bags
- ✓ Scythe on end of long pole
- ✓ Herbicide-related equipment e.g. stem injector, herbicide, water, measuring cups, spill kit etc.

E. Site Restoration

Smaller sites with sparse Giant hogweed should be left to naturally re-vegetate after treatment(s). For larger, denser Giant hogweed sites (e.g. > 25m²), restoration planting is advisable as follows:

1. Planting should only be undertaken once control methods are complete to reduce the potential conflict between protecting planted stock and controlling Giant hogweed germinants.
2. Native shrubs and trees should be used for re-vegetation. In shaded sites (e.g. a stream ravine), plant salmonberry (1 gallon), sword fern (1 or 2 gallon), western red cedar (2 gallon), and grand fir (2 gallon). Trees should be spaced approximately 2.5 meters apart and shrubs should be 1 meter apart. In sunny sites (e.g. forest edges), plant thimbleberry (1 gallon), snowberry (1 gallon), Nootka rose (1 gallon), Douglas-fir (1 or 2 gallon), western red cedar (1 or 1 gallon), and red alder (1 gallon).

3. Planting should be undertaken in spring (April 1–May 15) or early fall (October 15–November 15) when soil moisture levels are higher.
4. Some sites may be located in inaccessible stream areas and the transport of container-grown stock may be difficult. For these sites, the transplanting of native understory species such as sword fern and young shrubs should be considered or the use of smaller plant stock such as tree plugs (western red cedar primarily).
5. Exposed soil may occur following taproot cutting in dense patches. Use a general coastal re-vegetation (grass seed) mixture without fall rye, that is a grade of Common #1 Forage Mixture or better to minimize the further introduction of weed seeds. Use native grass seed if restoring a high value conservation area. Grass seed can be hand applied onto small disturbed areas or using a cyclone or rotary hand seeder for larger areas. Seeding should be undertaken from March 1 to May 1 or from September 1 to 15.