

# Giant Hogweed Control Methods Guide



Are you worried about giant hogweed hurting you or someone else? Is giant hogweed causing ecological damage to your environment through replacement of native plants or erosion of soil? Are giant hogweed plants limiting your access to areas where you wish to recreate (e.g. backyard, stream bank) or work in (e.g. overrunning your garden, field or orchards)? If you answered yes to any of these questions, you may be interested in learning about methods for controlling this non-native invasive plant.

A variety of control methods are available, including manual and mechanical methods, as well as herbicides. Some control methods are best used on small sites and others for large sites. You will have to choose the method that works best for the habitat, stage of plant growth and size of the site. In some cases, a giant hogweed infestation will be best controlled using several different methods. For instance, after using large-scale control methods (e.g. herbicide) for a number of years, it may be cheaper and easier to switch to a small-scale control method (e.g. cutting taproots) when only a few plants remain. The final part of any control method is to plant grasses or other plants to compete with giant hogweed and decrease soil erosion. Please read through all the available methods and information provided, particularly the safety instructions, before choosing and implementing the control strategy that will work best for your giant hogweed site.

In order for your control effort to be successful, you will have to ensure that no additional giant hogweed seeds are being introduced to the area. If your site is along a stream, you will want to coordinate with other properties upstream to limit seeds flowing downstream that could reinfest your site. It is very important to ensure that the giant hogweed plants are controlled **before** they produce seeds, and that **all** existing flower/seed heads are removed, heated by the sun in plastic bags for at least a week, and disposed of safely. With no influx of seed and persistent control efforts, giant hogweed plants can be eradicated.

For more giant hogweed information, to learn more about how to identify this plant, or if you have other giant hogweed-related questions, please refer to the DEC giant hogweed webpage [www.dec.ny.gov/animals/39809.html](http://www.dec.ny.gov/animals/39809.html). To connect with the giant hogweed program call 845-256-3111 or email [ghogweed@dec.ny.gov](mailto:ghogweed@dec.ny.gov).

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## 1. Giant Hogweed Growth & Development (pertaining to control)

Giant hogweed plants are long-lived perennial plants. Once seedlings emerge, they persist and will overwinter, as rosettes (circular clusters of leaves) for several years until the root gains sufficient nutrient reserves for the plant to flower. Most giant hogweed plants will die after producing a flower stalk, however if its root has developed side shoots, they could grow new plants the following year.



*Giant hogweed seedlings*



*Giant hogweed juvenile*



*Giant hogweed leaf rosettes*

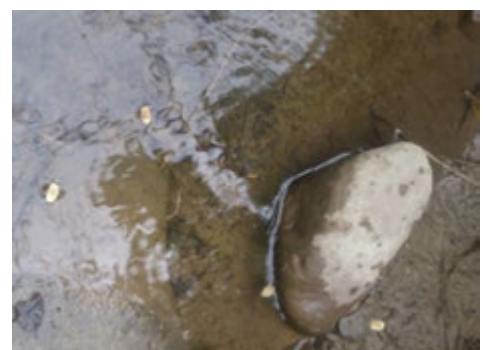
Giant hogweed plants are most commonly recognized when they are mature and flowering. However, since giant hogweed plants typically take three to four years before flowering, one must also look for the more numerous younger vegetative plants with small to large basal-leaf rosettes when identifying plants to control. In its first few years of growth, leaves and stems of non-flowering plants will die back over the winter. After the mature plant flowers and sets seed, the whole plant, including the root, will die. Flowering plants that are damaged or cut above the root before the plants set seed may regrow. As a rough guide, giant hogweed plants start growing in early spring, flower in June-July, and set seed in August. Giant hogweed plants have a long branching taproot up to 2 feet-long (60 cm) and 6 inches (15 cm) in diameter at the crown. Their large taproots store substantial below-ground resources, which can give some defense against physical and chemical control practices.



*Giant hogweed seed heads*



*Giant hogweed seeds*



*Seeds float for up to 3 days*

The plants reproduce by seed. An average plant produces 20,000 seeds, but some plants have been reported to produce over 100,000 seeds. However, since most seeds fall within a few meters of the parent plant, seedlings develop under very crowded conditions and seedling mortality is high. Most seeds (95%) are found within the top 2 inches (5 cm) of soil. Seeds are dispersed short distances by wind and can travel longer distances by water, floating up to three days. Most seeds are found within 30 feet (10 meters) of the giant hogweed colony, with a few plants traveling more than 150 feet (50 meters) away. Seeds can travel farther when

assisted by people. Disposing of flower heads improperly, sharing seeds/seedlings with other gardeners, transporting seed-laden soil during construction, mowing along roadsides, and wind currents from vehicles along highways and railroads may cause seeds to travel farther. Seeds may remain viable in the seed bank for more than 5 years. Since the dispersal of giant hogweed is almost entirely by seeds, it is very important to prevent the plants from flowering and setting seed.

Giant hogweed plants grow best in open sites with abundant light, but can grow successfully in woodlands, forest edges and partially shaded habitats too. The plants grow well in undisturbed or unmanaged sites and are less frequently found in tilled or grazed areas. The plants are resistant to frost and can withstand flooding, though they cannot grow in lakes, streams or other permanently submerged areas.

With their tremendous growth, large leaf area and prolific seed production, giant hogweed plants are able to outcompete and replace native vegetation. They shade out surrounding vegetation with their giant leaves and tight growth pattern. Bare soil is created below the plants, which leads to soil erosion in winter. Bare soil and the loss of plants with roots able to hold the soil is of special concern along slopes and stream banks.

Studies have found that giant hogweed invasion often begins with cultivation as a garden ornamental. The spread begins slowly from cultivated areas. Long-distance dispersal occurs when plants grow along roadsides, and along river or stream corridors. Once the plants become more prevalent, they spread throughout a variety of habitats.



*Bare soil underneath GH plants*



*Giant hogweed spreads along stream corridors*

## **2. Public Health Hazards & Safety Instructions**

Skin exposed to giant hogweed sap and sunlight can be severely burned. Clear, watery, giant hogweed sap contains several photosensitizing furanocoumarins. When it contacts skin and is exposed to sunlight, specifically ultraviolet light, it can cause phytophotodermatitis. This serious skin inflammation may lead to painful blisters within 48 hours. These blisters become dark pigmentation, or scars, that can last up to 6 years, though they typically only last a few months. The affected area often develops long-term sensitivity to sunlight. Needless to say, it is important to protect both your skin and your eyes while controlling giant hogweed to prevent serious injury from the sap.

Skin reaction depends on the individual's sensitivity to the sap. Heat and moisture (sweat or dew) can enhance the skin reaction. The phototoxic reaction can be activated by ultraviolet light as soon as 15 minutes after contact. Skin sensitivity typically peaks between 30 minutes and two hours after contact. Toxic furanocoumarins are present in all parts of the plant: the lower parts of the hollow stems and petioles may be partly filled with sap; the hollow hairs on

the plant also contain sap. The safety precautions in the next section describe how to protect yourself from injury as you control giant hogweed plants.



Example of a skin reaction to giant hogweed sap over a 5 month period Photo credit: Bob Kleinberg

### Safety precautions to follow when controlling giant hogweed plants:

- Do not touch the plant with bare skin. Burns can result from any action that involves bruising, cutting or touching the foliage, stem, flower or fruit.
- Wear long waterproof gloves, long sleeves, pants, boots and eye protection if you plan to work near, handle or cut down plants. Since cotton and linen fibers can soak up sap and be penetrated by plant hairs, synthetic water-resistant materials are best (e.g. dishwashing gloves, a rain suit or Tyvek™ suit, and rubber boots).
- Keep water, soap and eye-wash near work area in case of exposure to sap.
- If you think you have been exposed to giant hogweed sap, stop work immediately and wash the affected area with soap and water as soon as possible. Prevent ultraviolet light from reaching the skin of areas exposed to sap.
- Apply sunblock before beginning to work near giant hogweed plants.
- Do not touch exposed skin with sap-covered gloves or other contaminated equipment! Consider wearing a face shield for extra protection from touching your face with sap-covered gloves. Teams using manual control methods should keep a good distance from one another, as sap can splash three to four feet.
- Take care not to touch your skin when removing the contaminated protective gear after you are finished with control.
- Wash equipment with soap and water immediately after use.
- Change out of work clothes and wash yourself with soap and water after doing control.
- Limit exposure to sunlight after control.
- Launder clothing that may have contacted plants separately.
- At small sites, some have chosen to work after sunset to limit exposure to sunlight.
- DO NOT use a “weed-whacker” or brush cutter to avoid sap splattering on you.



Wear proper safety gear when controlling hogweed.

### **What should you do if you are exposed to giant hogweed sap?**

If you are accidentally exposed to sap, wash the affected area thoroughly with soap and water as soon as possible. Keep the exposed area away from sunlight for at least 48 hours. If a reaction occurs, topical steroids applied early can reduce its severity and ease discomfort. If sap goes into your eyes, rinse them with water, wear sunglasses and seek immediate medical care. As the affected area may be sensitive to sunlight for a few years, you may want to apply sunblock and/or keep the affected area covered from the sun for that length of time. Please see a physician if you have a reaction or have any questions.

### **3. Manual & Mechanical Control**

Manual and mechanical control methods include root cutting, cutting the plant, covering the soil, mowing, plowing and removing the umbels (flower/seed heads). Except for root cutting, manual control will not cause immediate death of the plant. All the other manual and mechanical control methods need two to three treatments per year for several years to deplete root reserves and kill the plants. All methods need to occur for multiple years until no new plants grow from the seed bank. Once no new plants grow from the seed bank, monitor the site for at least three more years to make sure no seedlings appear.

#### **a. Cut or dig up roots**

This is labor intensive but very effective. It will typically kill the plant after one treatment. It is ideal for a single plant or small infestations. We have found 400 plants to be a manageable amount for one or two people to control with this method. Root cutting can also be used for larger infestations if you have more time and/or people.

Cut the taproot approximately 6 inches (15 cm) below ground level using a spade with a sharp blade. In areas with erosion or on steep inclines, where additional soil may be covering the plant base, taproots may need to be cut up to 10 inches (25 cm) below the soil surface. When cutting the root, you need to separate the thick stem base bearing old leaf scars, from the root below. The stem base can be covered with up to 2 inches (5 cm) of soil. It is easiest to cut in early spring before the leaves are very large. If the plant does not die, cut again when it regrows. The cut part of the plants should be removed from the soil and left out to decompose. To lessen contact with the plant, it is recommended to leave cut plant material on location. If you choose to move cut plant material, use extra caution to avoid sap from cut stems and roots.



*Cut the taproot approximately 6 inches below ground level*

To make root cutting even more effective, return to the site 2 weeks or more after the first root cut. Cut the roots of any giant hogweed plants missed the first time, and remove any giant hogweed seedlings that have started to grow. Survey the site in July for missed plants that may be flowering and remove any seed heads found (read section 3c).

#### **b. Hand pull**

Young plants can be easily hand pulled (April-May). This is easiest to do when the soil is loose and moist. The stems are not woody and will break easily, so it is best to pull them gently to ensure full root removal. Using a trowel or other small hand tool may help ease

them out of the soil. Pulling will not work for mature plants, as the taproot is too large. Since you may actually be touching the plant, you must be very careful to wear waterproof gloves and clothing and not get the sap on yourself.

**c. Hogweed flower/seed head removal & safe disposal**

Removal of the seed head can be as effective as cutting the whole mature plant. The plant is going to die after flowering and setting seed, but cutting off the flower/seed head is VERY important to keep it from spreading seed. If this is your only control method for a particular plant, *timing is crucial*. If cut too early, while plants are flowering, new flowers will form on lower branches. Seed heads should be cut after the seeds have formed and white flowers are no longer visible. Cut seed heads before the seed matures and becomes dry to prevent the plant from shedding seeds while you are removing the seed heads. When cutting a mature seed head, try to avoid scattering seeds on the ground; if seeds are shedding, contain them within as small an area as possible.



*Seed head removal using a cut-and-hold pruner*

NOTE: It is appropriate to cut the plant in the flowering stage if done in conjunction with other control methods, such as root-cutting or herbicide control. If flower head removal is your only form of control, you will need to revisit the plant in a couple of weeks to cut off any new flower heads that may form.

A cut-and-hold long-reach pruner is the ideal tool for flower/seed head removal, but any sharp cutting tool long enough so you won't touch the plant can be used. Use the cutter to carefully cut off all flower/seed heads and place them in sturdy trash bags or doubled or even tripled lighter-duty trash bags. Since seeds may mature on severed flower heads, they must be carefully disposed of. Clear or dark trash bags will work for solarization (using heat from the sun to destroy seed viability). Seal trash bags tightly. If sap gets on the outside of a bag, put it inside another bag so the outside is safe to handle. If possible, place bags in a secure location where they will be exposed to direct sunlight for 1 week or more to destroy seed viability. Then dispose of trash bags in the garbage.



*Place flower/seed heads in trash bags for 1 week or more before disposal to destroy seed viability*

**d. Plowing**

Plowing is one of the best methods of mechanical control for giant hogweed, though it has to be done for multiple years, as large roots are capable of regrowth. This method eradicates the plant from infested fields and, if done in the fall, frost and freezing temperatures help degrade the root stock. Large roots should be removed from the plow zone to ensure no regrowth occurs. Deep plowing will significantly reduce germination of hogweed seeds, since the upper soil layer is buried and most seeds are within the top 2 inches of soil. Best results are obtained if plants are controlled mechanically or chemically

before plowing. Make sure to clean the plowing equipment before using it in another area to avoid spreading giant hogweed seeds to new locations.

**e. Cutting & Mowing**

Cutting plants above ground is not recommended as an eradication method. If you choose to use this method, plants must be cut at least three times per growing season for several years until their taproot energy reserves are depleted. In the beginning of this process, plants will typically grow back within a couple of weeks after being cut. Start when plants are small and continue mowing throughout the season, NEVER mow plants with a flower or seed head to avoid spreading seed. Repeated mowing is often used for large infested areas. If done consistently and on a regular basis, it can destroy most of the plants. Scything can be done in areas unsuitable for mechanical mowing, such as along riverbanks or on slopes, but it will not be effective in killing the plants without repeated control. Be careful not to spread the seeds. All flower heads should be removed and carefully disposed of (read part 3.c.) before mowing. Mowing equipment should be cleaned on site before using it in another area to avoid spreading giant hogweed seeds.

**f. Cut and cover**

This is an effective method when done correctly. It is recommended for use in small areas. It will keep plants from regrowing and prevent seedlings from emerging. Cut plants down to ground level and cover the soil with black plastic. Check the following year to make sure seedlings don't poke through the black plastic. After a few years, the black plastic can be removed and the area revegetated with native or non-invasive plants.

**g. Bury plants & seeds using a skid loader**

This is a very effective method. Use a skid loader to invert the infested area upside down and you will smother and compost most of the plants. Since the majority of seeds (95%) are found within the top 2 inches (5 cm) of soil, bury the topsoil to a minimum depth of 20 inches (50 cm) and cover it with clean soil to prevent the emergence of new plants. It is important to clean the equipment used on site before using it in another area to avoid spreading giant hogweed seeds.

**4. Herbicide Control**

Giant hogweed is susceptible to systemic herbicides, such as glyphosate and triclopyr. The application of these herbicides is considered effective and cost efficient. Herbicide application can be used for controlling a single plant or large stands. Systemic herbicides are absorbed by the leaves and move into the root to prevent regrowth. Triclopyr is a selective herbicide that acts only on broadleaf plants and will not harm grasses in the area. Glyphosate does not persist in the soil but is a non-selective herbicide, killing any surrounding vegetation it comes into contact with. Some triclopyr and glyphosate products are labeled for use in riparian areas and near water. Areas sprayed with triclopyr can recolonize with grasses and other herbaceous species within the same growing season. This helps to suppress giant hogweed seedling growth and decrease soil erosion.



*DEC staff control larger sites with herbicide*

Recolonization of sites where glyphosate was used may be slower than triclopyr sites unless glyphosate sites are reseeded.

Spray giant hogweed leaves with an herbicide containing triclopyr or glyphosate as the active ingredient. Use the recommended manufacturer's dose and follow label instructions; there is no advantage to using a higher dose. Apply herbicide between late April and early June, when hogweed leaves are green and actively growing. A follow-up treatment in July or August may be needed for plants that did not die from the first herbicide application (e.g. seedlings, leaf rosettes which were covered by leaves of plants originally sprayed). During this follow-up treatment, it is strongly recommended that you remove any flower/seed heads present to decrease next year's seed source (Read part 3.c.). Giant hogweed plants can be sprayed through mid-October, as long as they are still green and not dying back. It is easiest to spray before the plants grow overly tall. For tall plants, spray them in place or cut them down to ground level and spray the regrowth. To be successful in eradicating giant hogweed, herbicide treatments (or another control method) have to be repeated for multiple years in order to kill plants missed the prior year, as well as plants emerging from the seed bank.

Spray during dry and calm weather. Cover leaf surfaces thoroughly with herbicide, but do not spray to the point that liquid is dripping off the leaves. Adding a dye to the herbicide will help you see where you have already sprayed. Do not apply herbicide to non-target plants as you want them to live and revegetate the area. Be patient, it may take treated plants one to two weeks to begin to die. Do not cut or dig up the plant until the top growth has died back. If leaves remain green several weeks or a month after the initial treatment, spray them with herbicide again.

For certified commercial pesticide applicators, technicians and apprentices, listed below are five herbicides that are legal for specific use on giant hogweed in New York State.

Accord XRT II, EPA Reg. No. 62719-556 (contains glyphosate)

Garlon 4 Ultra, EPA Reg. No. 62719-527 (contains triclopyr)

Rodeo, EPA Reg. No. 62719-324 (contains glyphosate)

Roundup ProMax Herbicide, EPA Reg. No. 524-579 (contains glyphosate)

Roundup Pro Concentrate Herbicide, EPA Reg. No. 524-529 (contains glyphosate)

A copy of the FIFRA 2(ee) Recommendation letter which grants approval for use of the herbicide on giant hogweed, as well as a copy of the herbicide label, needs to be carried by the applicator when applying herbicides. The herbicide labels and 2(ee) recommendations can be downloaded at the NYS Pesticide Administration Database (NYSPAD) [www.dec.ny.gov/nyspad](http://www.dec.ny.gov/nyspad). Garlon 4 Ultra and Rodeo are classified as restricted and can only be applied by, or under the supervision of, a certified commercial pesticide applicator.

## **5. Animal Control (Grazing)**

Grazing by cattle, sheep, pigs or goats is very efficient for control of large stands of hogweed. Livestock prefer young plants, so it is best to begin the grazing early in the season when the plants are small. In areas with dense stands of hogweed, a single cut or mow is recommended to allow establishment of other plant species so livestock can have a mixed diet. Grazing pressure can be adjusted for stand density and growing season. It is recommended to use 20-30 sheep per hectare and reduce grazing pressure at the end of June to 5-10 sheep per hectare. Giant hogweed contains chemicals that can cause inflammation of the skin and any mucus-secreting membrane that is exposed to light (lips, nostrils, and eye areas). Densely pigmented skin and hairy surfaces are more resistant to the negative effects of these



chemicals. Choose hairy livestock with dark pigmentation where their skin is bare. Animals that show skin inflammation or blistering must be removed from the field temporarily. Livestock require monitoring by a veterinarian. If possible, the fenced area should include the giant hogweed colony as well as the surrounding area where seed dispersal may have taken place. Grazing will need to continue for a number of years until the taproot energy reserves and seed bank are depleted.

## 6. Monitor

It may be possible for hogweed seeds to remain viable in the soil for 15 years. For this reason, long-term monitoring is important. Check the site and surrounding areas for the next several years for the emergence of any hogweed seedlings or regrowth from previous year's plants. Seed bank longevity is dependent on soil conditions and the number of years viable seed was produced.



*Giant hogweed seedlings*

## 7. Revegetation

This step is very important. After removing giant hogweed plants, you may be left with an area of bare soil vulnerable to erosion, giant hogweed seedlings, and introduction of other invasive weeds. Re-establishment of native or non-invasive vegetation (e.g. through sowing of grass mixtures) at treated sites may be necessary to help achieve your desired control outcome. This will help to reduce soil erosion and provide competition for giant hogweed seedlings.

## 8. Overall Giant Hogweed Control Strategies

- Prevent introduction into new areas.
- Prevent the plant from dispersing seed
- Control hogweed until the seed bank in contaminated soil is exhausted. If removal of contaminated soil is necessary, bury the soil to a minimum depth of 20 inches (50 cm) and cover it with clean soil to prevent seedling emergence.
- Control new, smaller infestations first before the seed bank has a chance to establish.
- Comply with state and federal laws. NYS law prohibits possession of giant hogweed with the intent to sell, import, purchase, transport, introduce or propagate. Giant hogweed is a federal Noxious Weed, making it unlawful to propagate, sell or transport in the United States.
- Locate and map distribution of all populations.
- Focus on populations on the margin of range expansion as a way to slow or prevent further invasion.
- Target populations along rivers and streams and urban stormwater systems. Coordinate throughout the entire drainage system. Sites upstream should be controlled first, since seeds will be dispersed downstream.
- Manage stands along transportation corridors (railroads, highways) to prevent dispersal of seeds by air currents from vehicles and trains. Prevent spread of seeds by road maintenance practices.
- Educate the public to help locate giant hogweed populations, prevent spread, and control plants on their property.

## 9. Literature

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