

Oriental Bittersweet (*Celastrus orbiculata*)

Look: Perennial

- Oriental bittersweet is a deciduous woody perennial climbing vine or trailing shrub. Stems of older plants 4" in diameter have been reported. The leaves are alternate, glossy, round, with finely toothed margins. There are separate female (fruiting) and male (non-fruiting) plants. Female plants produce clusters of small greenish flowers in axillary clusters (from most leaf axils), and each plant can produce large numbers of fruits and seeds. The fruits are three-valved, yellow, globular capsules that at maturity split open to reveal three red-orange, fleshy arils each containing one or two seeds.



Issues: Oriental bittersweet is a serious threat to plant communities due to its high reproductive rate, long range dispersal, ability to root sucker, and rapid growth rate. Climbing Oriental bittersweet vines severely damage native vegetation by constricting and girdling stems. Vines can shade, suppress, and ultimately kill native vegetation. Oriental bittersweet has been shown to hybridize with the relatively rare American bittersweet (*Celastrus scandens* L.). Hybridization may lead to the loss of American bittersweet's genetic identity through introgression. Both are members of the Celastraceae (Stafftree) family.

Control: Management Recommendations

Since Oriental bittersweet produces numerous seeds, extensive seed reserves can become established in the soil within a year or two. Seeds of Oriental bittersweet remain viable for several years and control actions must continue until seed sources are eliminated.



Cutting: Cut climbing or trailing vines as close to the root collar as possible. This technique is feasible on small populations; as a pretreatment on large impenetrable sites; in areas where herbicide cannot be used; or if labor resources are not sufficient to adequately implement herbicidal control. This treatment will prevent seed production and strangulation of surrounding woody vegetation. Oriental bittersweet will resprout unless cut so frequently that its root stores are exhausted. Treatment should begin early in the growing season and be repeated at two-week intervals until autumn.

Pulling: This method is appropriate for small initial populations or environmentally sensitive areas where herbicides cannot be used. Using a pulaski or similar digging tool, remove the entire plant, including all roots and runners. Juvenile plants can be hand pulled depending on soil conditions and root development. Any portions of the root system not removed will potentially resprout. All plant parts, if mature fruit is included, should be bagged and disposed of in a trash dumpster to prevent reestablishment. The plant can be chipped and mulched if no seeds are present.

Careful application of herbicide may also be an option in certain areas for instance, you may have a massive invasion that stretches into a wooded area not open enough for a mower to navigate. Unless you have an extreme problem with bittersweet, I would recommend using any other non-chemical control.

If you are considering using chemical control remember:

Like any weed control method, herbicides will fail if used incorrectly. Herbicide exposure to water resources, the susceptibility of surrounding native plants to the herbicide, and the potential impact of herbicides on soil and wildlife must be considered in choosing the most appropriate product for your particular weed control program. Furthermore, using any herbicide correctly means using:

- **An herbicide which has a label allowing applications on the particular use site;**
- **The correct concentration (rate);**
- **An adjuvant if recommended** (adjuvants are spray solution additives that may make the herbicide more effective);
- **The right application method;**
- **The correct timing to coincide with plant susceptibility.**

As always with herbicide use, carefully read and follow all use directions and any restrictions or precautions listed on the product label. If in doubt, contact your local extension agent, pesticide dealer, Department of Agriculture, or the herbicide manufacturer for advice or clarification.



Plant Conservation Alliance: Alien Plant Working Group
<http://www.nps.gov/plants/alien/fact/cylo1.htm>
Invasive Plants of the Eastern US-
<http://www.invasive.org/eastern/eppc/bittersweet.html>

Systemic herbicides like triclopyr (e.g., Garlon® 3A and Garlon® 4) and glyphosate (e.g., Accord®, Glypro®, Rodeo®) are absorbed into plant tissues and carried to the roots, killing the entire plant within about a week. This method is most effective if the stems are first cut by hand or mowed and herbicide is applied immediately to cut stem tissue. Herbicide applications can be made any time of year as long as temperatures are above 55 or 60 degrees Fahrenheit for several days and rain is not expected for at least 24 hours. Fall and winter applications will avoid or minimize impacts to native plants and animals. Repeated treatments are likely to be needed. In areas where spring wildflowers or other native plants occur, application of herbicides should be conducted prior to their emergence, delayed until late summer or autumn, after the last killing frost occurs, or carefully targeted. If native grasses are intermingled with the bittersweet, triclopyr should be used because it is selective for broad-leaved plants and will not harm grasses. Follow-up monitoring should be conducted to ensure effective control. Glyphosate products referred to in this fact sheet are sold under a variety of brand names (Accord®, Rodeo®, Roundup Pro® Concentrate) and in three concentrations (41.0, 50.2 and 53.8% active ingredient). Other glyphosate products sold at home improvement stores may be too dilute to obtain effective control. Triclopyr comes in two forms – triclopyr amine (e.g., Garlon® 3A, Brush-B-Gone®, Brush Killer®) and triclopyr ester (e.g., Garlon® 4, Pathfinder®, and Vinex®). Because Garlon® 3A is a water-soluble salt that can cause severe eye damage, it is imperative that you wear protective goggles to protect yourself from splashes. Garlon® 4 is soluble in oil or water, is highly volatile and can be extremely toxic to fish and aquatic invertebrates. It should not be used in or near water sources or wetlands and should only be applied under cool, calm conditions.

Basal bark application

Use a string trimmer or hand saw to remove some of the foliage in a band a few feet from the ground at comfortable height. To the exposed stems, apply a 20% solution of triclopyr ester (Garlon® 4) (2.5 quarts per 3-gallon mix) in commercially available basal oil with a penetrant (check with herbicide distributor) to vine stems. As much as possible, avoid application of herbicide to the bark of the host tree. This can be done year-round although efficacy may vary seasonally; temperatures should be above 50 degrees F for several days.

Cut stem application

Use this method in areas where vines are established within or around non-target plants or where vines have grown into the canopy. Cut each vine stem close to the ground (about 2 in. above ground) and immediately apply a 25% solution of glyphosate (e.g., Accord®) or triclopyr (e.g., Garlon® 3A) mixed with water to the cut surface of the stem. The glyphosate application is effective at temperatures as low as 40°F and a subsequent foliar application may be necessary. The triclopyr application remains effective at low temperatures (<60°F) as long as the ground is not frozen. A subsequent foliar application may be necessary to control new seedlings. Homeowners can apply products like Brush-B-Gone®, Brush Killer® and Roundup Pro® Concentrate undiluted to cut stems. Using a paint brush or a plastic spray bottle, apply herbicide to the cut surface.