Information Sheet

How to identify and control Oriental Bittersweet, a threat to West Virginia's forests

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What is oriental bittersweet?

Oriental bittersweet (*Celastrus orbiculatus*) is an aggressive vine that was introduced into this country from Asia in the 1860s. It has moved into the woodlands of West Virginia. **If oriental bittersweet becomes established in an area, it can cause a lot of damage and it can take a lot of work to remove it.** This information sheet will help landowners learn how to identify oriental bittersweet and will describe some of the ways it can be controlled.

What problems does this plant cause?

Oriental bittersweet vines grow rapidly and can grow to over four inches thick. A large vine looks like a snake, circling itself around the trunk of a tree as it climbs to the top. **It wraps around and girdles the trunk, basically strangling it. Meanwhile, it smothers the tree.** As it reaches into the crown, its leaves block the sun from reaching the tree's own leaves. Vines can climb at least 60 feet into the tops of trees. **In winter, the added weight of the vines when covered with snow and ice can break trees and shrubs.**

Bittersweet is shade tolerant, so even under shady conditions it can dominate entire forest stands. Although it was first introduced as an ornamental because of its attractive fruit, it has escaped cultivation and has gone rampant in the wild.

How can I identify oriental bittersweet?

Identification in summer

The leaves can be round or egg-shaped and are arranged on alternate sides along the stem. The edges of the leaves have fine teeth and the tips of the leaves often come to a long, tapering point. The leaves are glossy green in spring and summer and they turn bright yellow in fall, making this plant easy to spot from a distance.

Fruit hangs in clusters all along the stem; the outer fruit covering that splits apart is bright yellow.

The flowers bloom in May or June. Flowers are small and have five petals; they are greenish-yellow in color and are not very obvious. Clusters of three to seven flowers occur along the stem.

Oriental bittersweet usually has abundant fruits. The fruits are green in early summer, but they become bright yellow in early fall. **The bright yellow outer fruit then splits apart along three seams and reveals a bright red, fleshy inner fruit.** Some vines have heavy masses of fruit that last through the winter.

Identification in winter

The stems of young bittersweet vines have small, light-colored bumps (lenticels) on the surface; these later become sunken dark areas on older stems. **In winter, the buds are in an alternate arrangement along the stem; they are small and stubby and sharply pointed, and grow out at an almost 90-degree angle.** In the leafless winter condition, these features help to separate bittersweet from other twining vines like Japanese honeysuckle (*Lonicera japonica*) or Dutchman's pipe (*Aristolochia macrophylla*).

What is the difference between oriental and native bittersweet?

It's important to learn how to identify oriental bittersweet to avoid accidentally killing the native bittersweet vine (*Celastrus scandens*). The best way to tell the difference between the two vines is by the location of the flowers and fruit. **The flowers and fruit of oriental bittersweet hang from points all along the stem, while flowers and fruits of the native bittersweet are located only at the tips of the branches.** Another feature that helps separate the two species is the color of the outer fruit covering. **Oriental bittersweet has a bright yellow outer fruit covering that splits open to reveal the red inner fruit, while on a native bittersweet vine this outer fruit covering is orange.**

How can I get rid of oriental bittersweet?

Like other weeds, oriental bittersweet can be cut or pulled when it's young. However, stumps and roots can sprout so follow-up visits should be planned. Biological control has not been explored in any depth. At least one report suggests that bittersweet is readily eaten by goats but cautions that seeds passed through the goat's gut may still be viable. Goats will eat not only bittersweet but any other vegetation, desirable or undesirable.

Cut-stump method of treatment

Cut-stump method: Spray a 50% solution on cut stump; do only during growing season.

Cutting a bittersweet vine kills the top portion of the plant growing overhead in the crown of a tree or shrub. **An herbicide can be used to prevent sprouting of the cut stem.** The cut stump should be sprayed with a concentrated glyphosate-based herbicide (contains at least 40% of the active ingredient glyphosate). The herbicide should be mixed with water in a 50:50 ratio (a 50% solution). This is called a "cut-stump" treatment. When using this method, be sure to apply the herbicide immediately after cutting the stem.

Foliar application

Foliar application: Spray 1.5% glyphosate herbicide on leaves of stems that resprout and on seedlings.

This method of applying herbicide is to spray the leaves on stems that are resprouting and on seedlings with a glyphosate-based herbicide. A concentrated glyphosate herbicide should be mixed with water to yield at least a 1.5% solution and should be sprayed to completely wet the bittersweet leaves. The cut-stump and foliar treatments should only be carried out during the growing season and during times when soil moisture is adequate for good growth, not during droughty periods. Landowners should plan on follow-up treatments that will most likely be needed to eliminate persistent sprouts and new seedlings that come up.

Low-volume directed sprays

Low-volume directed spray: Spray 7-10% glyphosate herbicide on at least 50% of foliage.

Some herbicide labels recommend a 5-10% glyphosate herbicide solution for "low-volume directed sprays" where at least 50% of the foliage of any given plant is treated. At least one anecdotal report based on field observations suggests that the lower levels of glyphosate are somewhat ineffective and that concentrations of 7-10% used in low-volume directed spraying will give good results.

Basal bark application

Basal bark application: Spray or brush 20% triclopyr herbicide in oil on base of stems; can be done year-round.

Vines can be treated with a solution of triclopyr ester in bark oil. Concentrated triclopyr herbicide (contains at least 40% of the active ingredient triclopyr) should be mixed in an 20:80 ratio (herbicide:oil) to yield a 20% solution. The solution can be sprayed or brushed on the lower 10-12 inches of the vine near ground level. Extreme care should be taken when using this method, since bittersweet vines are frequently rooted right next to supporting trees and shrubs. The triclopyr solution can cause serious damage if it is splattered, dripped, or squirted onto adjacent trees or other desirable plants. Basal bark application can be done any time of year as long as stems are not covered by water, snow, or ice.

When using herbicides, it is extremely important to follow the instructions on the label. Read the label carefully and pay attention to specific recommended rates, application methods, and the type of personal protective equipment that should be worn while applying the herbicide.

In areas where bittersweet is abundant, and there are both large vines and smaller shrubby growth, a landowner may have to prioritize his time and effort. **A landowner with limited resources should consider eliminating the larger vines first, as these can produce very large quantities of seed that will continue to repopulate the site with bittersweet**. In addition, follow-up treatments will be necessary to control resprouting from cut stems, as well as seedlings from fruit that has been dispersed onto the site.

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