



INVASIVE PLANT FACT SHEET

# Autumn Olive

(*Elaeagnus umbellata*)

Photo credit: Dave Jackson

## Background

Autumn olive (*Elaeagnus umbellata*) is an ornamental shrub first introduced to North America in the mid-1800s. This shrub's silvery foliage, showy flowers, and colorful berries made it popular in landscaping, though it was also planted extensively for a period of time in natural areas to provide erosion control, wind breaks, and wildlife food. The abundance of fruit, which is readily dispersed by birds, is key to the success of this species. From the East Coast as far west as Nebraska, autumn olive is an aggressive invader of roadsides, pastures, abandoned agricultural land, forest edges, and other disturbed habitats.

## Description

**Size:** Rapidly growing, often multistemmed, and can reach heights of up to 20 feet and spread 30 feet wide.

**Flowers:** Trumpet-shaped, white to pale yellow flowers bloom in spring. Each flower has four petals, and the ½-to-¾-inch blooms are arranged in clusters of four to six.

**Fruit:** Clusters of four to six brilliantly red fruit form in late summer, each ½ inch or less in diameter, flecked with silvery scales. Later in the season they may darken slightly and appear browner. When broken open, they reveal a single seed.

**Leaves:** Simple, elongate leaves with smooth, or entire, margins arranged alternately along the stem, each 2–4 inches long.

The upper surface is pale green, while the underside appears silver or white due to the presence of small silvery scales.

**Stems:** All stems are ashy brown, but silvery scales are especially prominent on young stems, which sometimes appear totally gray. The stems also bear sharp, stout spines.

## Look-alikes

Russian olive (*Elaeagnus angustifolia*) is a nonnative invasive shrub that is nearly identical to autumn olive. Though they have some differences—notably Russian olive's green, mealy fruit, in contrast to the bright, mottled red fruit of autumn olive—the species are ecologically very similar and require the same control treatment.

## Dispersal

Autumn olive spreads only through seed dispersal, primarily by birds. The fruit persist through fall before drying up and falling off the plant. Unlike many native shrub species, autumn olive matures quickly and can produce fruit in as few as three years. Though abundant, the fruit are of low nutritional value to wildlife in comparison to the native shrub species they displace.



- A. Flower clusters
- B. Spine and stem coloring
- C. Leaves and unripe fruit
- D. Ripe fruit
- E. Silvery leaf underside
- F. Growth form under full sun

*Photos by Dave Jackson*

**Site**

Intolerant of dense shade, autumn olive is most commonly found on disturbed sites with full to partial sun. However, it is highly tolerant of salinity, extreme pH, and heavy metals, a trait that enables the plant to survive or thrive on very poor sites, including highway roadsides, mine spoils, and other

postindustrial sites. This is partly due to autumn olive's ability to create its own absorbable form of nitrogen, altering the local nitrogen cycle to which native plant communities are adapted.

## Management Calendar

The management calendar for autumn olive is quite flexible because the foliage emerges early and falls late. Basal bark and cut stump treatments provide a year-round window of opportunity.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Leaf Out												
Flowering and Seed Ripening												
Foliar Herbicide Application												
Basal Bark and Cut Stump Treatments												

## Treatment and Timing

Autumn olive leaves out early and drops its leaves late, providing a long foliar application window. Basal bark and stump treatments can be made anytime the weather permits. Product names reflect the current Pennsylvania state herbicide contract; additional brands with the same active ingredients are available.

Treatment	Timing	Herbicide	Product Rate	Comments
<b>Foliar</b>	Mid-May to onset of fall color	Aquaneat (glyphosate) plus Garlon 3A or Vastlan (triclopyr amine)	3 quarts/acre plus 2 quarts/acre or 1.5 quarts/acre	A combination of glyphosate plus triclopyr is effective against a broad spectrum of woody species. Additionally, this mixture reduces risk to nontargets because it has practically no soil activity and the herbicide products are labeled for aquatic applications. Garlon 3A and Vastlan are both triclopyr amine formulations but have different active ingredient concentrations.  A surfactant (e.g., CWC 90) needs to be added. If using a different glyphosate product, be sure to check the product label to see if a surfactant is needed; some come premixed.
<b>Basal Bark</b>	Year-round	Pathfinder II or Garlon 4 Ultra (triclopyr ester)	Ready-to-use or 20%, 1:4 in basal oil	Oil-based herbicides penetrate the plant's bark and travel systemically through the plant. Basal bark applications wet the entire circumference of the lower 12 to 18 inches of the stem. Aim for full coverage on stems without creating excessive runoff.
<b>Cut Bark</b>	Year-round	Pathfinder II or Garlon 4 Ultra (triclopyr ester)	Ready-to-use or 20%, 1:4 in basal oil	Cut stump treatments with oil-based triclopyr ester herbicides are applied to the cut surface as well as the bark of the stump and can be applied anytime after the stems are cut. An oil-soluble colorant should be added to improve tracking, avoid skips, and duplicate treatment.
		Aquaneat (glyphosate) or Garlon 3A or Vastlan (triclopyr amine)	50%, 1:1 mix with water	Unlike the oil-based herbicides, water-based treatments are only applied to the cut surface and must be made immediately after the stems are cut. A water-soluble colorant should be added to improve tracking, avoid skips, and duplicate treatment.

## Control

In a prescription to control autumn olive, plan to “save the best,” or work from least to most invaded areas, such as areas where there is desirable native vegetation and few invasives. This will maximize cleared areas, not only producing an outcome of higher ecological value, but also creating a much greater sense of accomplishment, as autumn olive is extremely difficult to eradicate once it is established.

As the seeds are dispersed by birds, new invasions can and will reoccur, but spot removal of a few isolated individuals is easily accomplished as a part of any invasive plant maintenance program.

Individual small plants can be pulled by hand. However, all roots must be removed, as fragments have the possibility of resprouting. Cutting or mowing effectively eliminates the shrub canopy and provides access to overgrown sites, but the

plants will readily resprout. Smaller stems are easily cut with heavy-duty rotary or flail cutters (i.e., “bush hogs”). For larger stems, fixed-tooth, drum-type forestry cutters have the capacity to cut down large stems and also finely chop the debris.

For mowing to be effective, it must be followed with an herbicide application to cut surfaces or regrowing sprouts. Oil-based treatments (1:4 mixture) can be applied to the stumps anytime after cutting, while water-based (1:1 mixture) treatments should be applied as the stems are cut. Treating sprouts with a fall foliar herbicide application (or application the following growing season) is an alternative to treating cut stumps when immediate application of the herbicide to stumps following cutting is not possible or practical. Selectively treating knee-to-waist-high resprouts with a backpack sprayer is a relatively quick process on low-growing foliage.

Foliar herbicide treatments with a backpack sprayer are the most effective means to treat sites with low to moderate plant densities. A useful treatment for autumn olive is a combination of glyphosate and triclopyr amine as glyphosate alone is an ineffective foliar treatment for this species. Other herbicides proven effective for autumn olive are 2,4-D (in combination with triclopyr), imazapyr, and dicamba, all available under many different brand names. When using a new herbicide, be aware of its properties, such as soil activity and volatility. Be sure to calibrate your spray application to achieve the desired dosage, and follow the label.

Basal bark treatments are effective against autumn olive and can be applied throughout the year. Basal bark treatments use a concentrated mixture of the herbicide triclopyr ester in basal oil applied to the entire circumference of the lower 12 to 18 inches of the intact stem, depending on its size. Pathfinder II is a ready-to-use triclopyr ester product that can also be used, no mixing required.

## Human Use

Autumn olive is well established across the Mid-Atlantic due to its extensive intentional planting to provide wildlife food and revegetate mine spoils in the mid-1900s. While this shrub does produce huge amounts of berries eaten by birds and mammals and can thrive on reclaimed mine sites, where pH extremes and high levels of toxic heavy metals are common, these positives do not outweigh the negatives associated with this shrub's ability to invade and take over natural areas. Like other invasive shrubs, autumn olive's fruit is low in proteins and fats but high in carbohydrates, rendering it far less nutritious than fruit from the native plants that it displaces from habitats. Additionally, the fruit of autumn olive is sometimes collected and eaten by humans, usually made into jellies or jams. Care should be taken when collecting for consumption since heavy metals can be translocated from the roots to other plant parts, including the fruit.

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