

## Winged Euonymus or Burning bush, *Euonymus alatus*

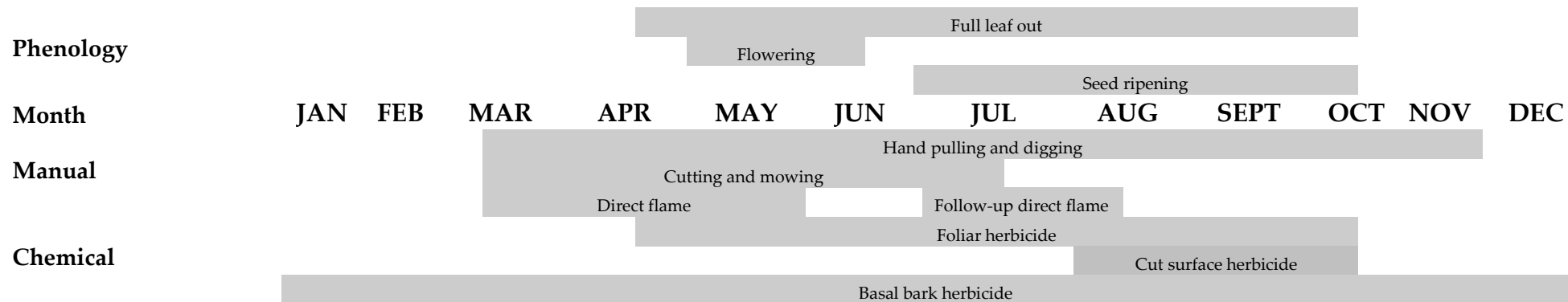
### Species Biology and Phenology:

**Habitat:** Winged euonymus is able to thrive in many landscape types including roadsides, open fields, open woods and mature forests. It is shade tolerant and grows under a wide range of light and soil types, pH levels and is salt tolerant. It is most successful in well drained soils, but is competitive in water logged soils and becomes stressed in soils subject to drought.

**Reproductive Strategy:** Winged euonymus primarily reproduces by seed but it can spread through vegetative means by root suckering. The 4-petaled flowers are inconspicuous and appear in May to early June. The fruit is a cluster of showy pods, usually four found in the leaf axils. Immature fruits are green that ripens to a purplish outer side that splits to reveal seeds with bright, red-orange coatings in the fall.

**Dispersal:** Seed production is prodigious; many fall and germinate close to the mother plant creating dense beds of seedlings. Others are spread by birds and other mammals that are attracted to the seeds by their nutritious, fleshy, red covering (aril). Seeds dispersed this way germinate easily and spread the infestation rapidly. Wide usage of this a popular landscape ornamental increases the probability that more will escape from cultivation.

### Species Phenology and Treatment Options:



## Treatment Methods:

Category	Method	Method Description	Considerations
<b>MANUAL</b>	Manual treatment can be highly effective for winged euonymus		
	Hand Pulling	<ul style="list-style-type: none"> <li>• Pull entire plant by the base of the stem</li> <li>• Be sure to remove entire root system</li> <li>• If feasible and fruit is present, bag and dispose of fruits to prevent seed dispersal</li> <li>• Dry or burn all vegetation (most importantly roots) by hanging upside down on surrounding vegetation or piling into a brush pile and burning</li> </ul>	<ul style="list-style-type: none"> <li>• Effective on small-medium sized plants and small infestations</li> <li>• Most effective if done when soil is wet</li> <li>• Remaining portions of roots system not removed can re-sprout</li> <li>• Avoid dragging or piling pulled plants into an area that is currently uninfested</li> </ul>
	Weed Wrenching	<ul style="list-style-type: none"> <li>• Remove plant by the base of the stem</li> <li>• Be sure to remove entire root system</li> <li>• If feasible and fruit is present, bag and dispose of fruits to prevent seed dispersal</li> <li>• Dry or burn all vegetation (most importantly roots) by hanging upside down on surrounding vegetation or piling into a brush pile and burning</li> </ul>	<ul style="list-style-type: none"> <li>• Can be more helpful than pulling larger plants</li> </ul>
	Mowing/ Cutting	<ul style="list-style-type: none"> <li>• Use lopper, pruning shears, weed whacker/brush saw or mower to cut the stem as close to the ground as possible</li> <li>• Cut at least 1 times during growing season (mid May-October)</li> <li>• Repeat for 3-5 years</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting/mowing can help slow the spread of burning bush</li> <li>• Cutting/mowing will encourage re-sprouting and may need to be conducted for 3-5 years to fully exhaust root system and kill plant</li> <li>• Most effective if followed with foliar herbicide application</li> </ul>
	Grazing	<ul style="list-style-type: none"> <li>• Might be a viable treatment option for this plant, especially for young plants or sprouts of cut plants. More research is needed.</li> </ul>	
	Flame Weeding	<ul style="list-style-type: none"> <li>• Might be a viable treatment option for this plant, especially for young plants or sprouts of cut plants. More research is needed.</li> </ul>	

<b>CHEMICAL</b>	Active ingredients commonly used in herbicides: glyphosate or triclopyr		
	Foliar Application	<i>If foliar spraying only:</i> <ul style="list-style-type: none"> <li>• Foliar spray when plant is fully leafed out (May-October)</li> <li>• Spray leaf surfaces with low volume backpack sprayer, or high volume mist blower</li> </ul>	<i>Low Volume Backpack Sprayer</i> <ul style="list-style-type: none"> <li>• Herbicides (active ingredient): glyphosate or triclopyr with surfactant</li> <li>• Used to target winged euonymus plants and minimize drift to desirable species</li> </ul>
		<i>If cutting and foliar spraying:</i> <ul style="list-style-type: none"> <li>• Use lopper, pruning shears, weed whacker/brush saw or mower to cut the stem as close to the ground as possible</li> <li>• Cut during early growing season (April and May)</li> <li>• Spray sprouts with a low volume backpack sprayer during late growing season (September and October)</li> </ul>	<i>Low Volume Motorized Mist Blower</i> <ul style="list-style-type: none"> <li>• Herbicides (active ingredient): glyphosate or triclopyr with surfactant</li> <li>• Used for very larger and dense infestations that have little desirable, native vegetation that will be damaged by drift</li> </ul>
	Cut Surface	<ul style="list-style-type: none"> <li>• Cut stems 2-4" above the ground in late summer to early fall</li> <li>• Apply herbicide immediately after cutting the exposed surface using a sponge, brush, hand-held squirt bottle or directly pouring</li> <li>• Apply herbicide to at least the outer 20% of the surface</li> </ul>	<ul style="list-style-type: none"> <li>• Herbicides (active ingredient): glyphosate, triclopyr mixed with surfactant</li> </ul>
	Basal Bark	<ul style="list-style-type: none"> <li>• Use a low pressure, low volume backpack sprayer</li> <li>• Apply herbicide around the entire circumference of the lower 8-18" of individual stems of the plant and include the root collar</li> <li>• Larger stems require the larger (18") treated area</li> <li>• Do not spray to the point of runoff</li> </ul>	<ul style="list-style-type: none"> <li>• Herbicides (active ingredient): triclopyr in an oil or oil-water mixture</li> <li>• Recommended for scattered or light infestations of large plants</li> <li>• Used to target winged euonymus plants and minimize drift to desirable species</li> </ul>
	Girdle and frill	<ul style="list-style-type: none"> <li>• Cut anywhere between 5-50" above the ground using a saw</li> <li>• Cut through the bark into the phloem in a 4-5" wide strip (depending on tree size)</li> <li>• Cut in either a continuous strip or evenly spaced patches</li> <li>• Cut through the bark into the phloem</li> <li>• Peel/knock the intervening bark off the stem</li> <li>• Apply herbicide to the cambial layer in the fresh cuts using a paint brush, squirt bottle, or backpack sprayer</li> </ul>	<ul style="list-style-type: none"> <li>• Herbicides (active ingredient): glyphosate or triclopyr</li> <li>• Used for larger plants if basal bark is not an option</li> </ul>