

# Invasive Species Management Matrix

Species	Timing				Chemical treatments*** (see important note below)			Notes
	Winter	Spring	Summer	Fall	Cut stump	Basal bark application	Foliar spray (before leaf-out of natives)	
<b>Buckthorn</b>								
Cut & Treat	cut and treat stump		cut and treat stump	<b>cut and treat stump - best time</b>	20-25% glyphosate or 12.5% triclopyr			Can work for all sizes but is a must for plants larger than 6" in diameter
Basal Bark Treatment	treat stem		treat stem	<b>treat stem - best time</b>		12.5% triclopyr with penetrating oil		Works well for stems less than 6" in diameter. Can treat only one side for stems less than 2" in diameter.
Foliar Spray			spray foliage	spray foliage			1.5% glyphosate or 1% triclopyr with water; surfactant required	Best to avoid native vegetation, best to do in fall after natives have dropped their leaves but invasives retain foliage
Burn*		burn to kill seedlings in fire-adapted communities; may require frequent burns						burn to deplete seedbank; seedlings will need repeated burns
Pull**	can pull small stems when soil is moist							
<b>Honeysuckle</b>								
Cut & Treat	<b>cut and treat stump - best time when using triclopyr</b>		cut and treat stump	<b>cut and treat stump - best time</b>	20% glyphosate or 12.5% triclopyr			cut stems can resprout so its important to hang them in trees to allow them to dry out
Basal Bark Treatment	treat stem		treat stem			12.5% triclopyr with penetrating oil		Using penetrating oil to be most effective
Foliar Spray		<b>spray foliage - best time</b>	spray foliage	spray foliage			Metsulfuron-methyl plus surfactant or 1.5% glyphosate	Less effective than other methods
Burn*	burn in spring to deplete seed bank seedlings							Will need to repeat burn to be effective
Pull**	can pull small stems when soil is moist							Metsulfuron-methyl plus surfactant or 1.5% glyphosate
<b>Multiflora rose</b>								
Cut & Treat	cut and treat stump				20% glyphosate			
Bark Treatment	treat stem					12.5% triclopyr with penetrating oil		
Foliar Spray			July-Sept spray foliage with fosamine				2% fosamine in water	fosamine spray results won't be seen until following summer; must cover well but not dripping
Burn*	burn in spring							will need follow-up treatment to address resprouting and establishment of new plants
Pull**	can dig from soil							must get all of the roots or it will sprout
<b>Oriental bittersweet</b>								
Cut & Treat		cut and treat vine		cut and treat vine	20% glyphosate or 12.5% triclopyr			should wait until after natives have dropped their leaves or in early spring before emergence of spring ephemerals
Bark Treatment								
Foliar Spray				after first hard frost spray foliage			2,4 D or triclopyr	on severely disturbed sites spray after first hard frost in the fall
Pull**	can pull or dig out small infestations							

Species	Timing				Chemical treatments*** (see important note below)			Notes
	Winter	Spring	Summer	Fall	Cut stump	Basal bark application	Foliar spray (before leaf-out of natives)	
<b>Garlic mustard</b>								
Foliar Spray		1-2% glyphosate, 1% triclopyr or 2,4 D near lawns and grassy areas		1-2% glyphosate but only AFTER a hard frost and when the temperature is above 50				must be applied in early spring before native vegetation emerges, can use leaf blower to expose additional plants, will require follow-up pulling for any plants that were missed, must be sure to keep children and pets away from the area until chemicals have broken down
Burn*		burn		burn - better because there's more fall leaf litter to carry the fire				will require 3-5 years of repeated burning; spring burning must be done early to minimize damage to early spring wildflowers
Pull**		pull before seeds are mature						it is important to pull the whole plant and dispose of, or burn, seed heads so they do not continue to develop on the forest floor; best to prioritize infestations and weed one spot well than weed the whole area poorly, try to minimize soil disturbance as it can lead to additional seed germination, disposal needs to be considered carefully
Cut		can be done but cutting height and timing is critical and results are mixed						studies show varying results, best results seem to come from cutting stems very close to ground after flower stalks have elongated but before flowers have opened, significant re-sprouting can be a problem
Cultural	Clean shoes, pants, gear, tires and equipment carefully before transporting. Seeds are small and move easily and are viable for up to 7 years.							

**\*Burn:** should only be done in fire-adapted native plant communities, such as prairies, grasslands, herbaceous wetlands, and oak-dominated

**\*\*Pull:** only pull when the soil is not frozen and moist enough to minimize soil disturbance

**\*\*\* Chemical Treatment:** It's important to distinguish between the triclopyr amine and the ester. The amine is the water-soluble form (i.e., Garlon 3A) whereas the ester should be mixed with oil/diesel (i.e., Garlon 4). Garlon 3A is most commonly used in foliar application but can be applied to stumps as well. Garlon 4 is most commonly used in basal bark treatment and cut stump (can be used in foliar but should be minimized--i.e., spraying diesel all over).

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Funding for this project was provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).