Integrated Pest Management for Woody Invasive Plants

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Integrated Pest Management Practices	Action	Description	Timing	Advantages	Disadvantages
Mechanical	Repeated Cutting / Mowing	Cutting or mowing seedlings, saplings or sucker sprouts during routine lawn maintenance or at least 4 times during a growing season.	Spring, summer, fall	Very effective if done on a routine basis.	Stems may be too large to mow. Cut stems can be sharp and may pose a safety issue.
	Hand Pulling	Up to ½" diameter seedlings, which typically have small rooting systems. Most invasive woody plants occurring woodland setting typically pull easier than those occurring in the open, even those with 3/8" caliper.	Pulling is easiest in the spring or fall after a rain event when the ground tends to be wetter making it easier to remove the roots. Pulling can also be done in the summer, but may be slightly more difficult if soils are dry.	Where plants are sparse it can be the most expedient and environmentally friendly course of action.	Pulling is not practical on large heavily colonized sites.
	Flame Treatment **Generally NOT recommended**, but has been affective on seedlings	Using a propane flame thrower/torch burning every year or every other year in established stands may be required for 5-6 years or more	Late March to early May or in the fall and done only when it's raining and the ground is wet to prevent fires from forming.	Effective at controlling seedlings or small saplings.	If not done properly when the environment isn't sufficiently damp/wet, fire can escape. Propane is a very costly fuel.
	Cutting at the base	For stems greater than 1 ½" diameter use a hand saw or chainsaw and cut the stem at the base close to ground level to inhibit sucker sprouts from forming.	Anytime, but generally the efficacy increases if done in the late fall through late winter.	Cutting large shrubs at the base allows the plant material to be removed from the landscape allowing native or alternative species to regenerate.	Stumps may resprout profusely. Resprouting stumps can also be treated with foliar sprays applied after a month of regrowth has formed.
	Weed Wrench or Forked Spade	Up to 1 ½" diameter saplings.	Spring, summer, fall	Effective at pulling small to medium sized woody plants from most sites.	The tool is somewhat heavy and cumbersome to move over long distances. Requires two or more attempts to remove some plant/roots.
	Smothering				
Cultural	Interplanting	Create shaded environments by planting trees or large shrubs within the invaded site to reduce available sunlight exposure to invasives.	Spring, summer, fall	Maintains wildlife habitat characteristics of site.	Requires an investment in time and money to establish a dense overstory.

Biological	Pathogen For Buckthorn spp.. Not known to occur in NH.	Phomopsis – Glossy buckthorn	Spring, summer, fall	Inoculation is very simple and requires no special equipment.	Can negatively affect native and other desirable plants.
Chemical This is best used during late summer through fall when the flowering period is over and carbohydrates are starting to migrate downward to replenish the rooting system for overwintering. Herbicides can be used during the growing season, but there is more risk of affecting non-target plants and effectiveness is generally lower.	Foliar Spray Using a backpack pump sprayer, garden style sprayer or mist blower.	Apply either a glyphosate base product. Spray the upper surface of all foliage until the point of run-off, but not dripping. These chemicals are nonselective; they can harm or kill most plants.	Late September through November.		Potential to impact non-target species.
	Cut Stump	In summer, fall or winter (avoid spring) cut stems near ground level and treat the stumps with triclopyr mixed with non-toxic bark penetrating oil such as Canola oil or Methylated Seed Oil (MSO). Resprouts should be treated the following year.	Early summer through winter	More cost effective on large acreage, high efficacy, year round use.	Useful on most sites. Homeowners wishing to treat a small number of plants can purchase triclopyr, but may be costly.
		In summer, fall or winter (avoid spring) cut stems near ground level and treat the stumps with glyphosate. Resprouts should be cut and treated again. *(Must be applied within 24 hours of cutting)*	Early summer through winter	Less environmental/user risk.	Moderate efficacy reported, must be mixed (water, dye, non-ionic surfactant), moderately expensive, will not work if applied in spring.
	Low Volume Basal Bark Application to the lower 18” of stems no greater than 6” diameter.	In summer, fall or winter apply triclopyr diluted with Canola oil or Methylated Seed Oil (MSO) and completely encircle basal 18" of each stem. Thoroughly wet bark but NOT to point of runoff. Colder temperatures may adversely affect spray pattern.	Early summer through winter	Doesn’t require cutting top of plant. Price is more cost effective, high efficacy, season-long use.	Container size not practical for small applications, must be mixed with an oil dilutent.
	Frill (Applying herbicide into the cambial layer of fresh cuts on the tree trunk)	In summer, fall or winter using a hatchet or cutting tool, make wounds completely around the stems. Apply triclopyr diluted with Canola oil or MSO to the wounds.	Early summer through winter		