CHEMICAL CONTROL OF BUCKTHORN
(Adapted from Buckthorn: A threat to our Native Woodland Ecosystem by Janet Van Sloun. Updated Feb. 2016)

There are many ways to kill buckthorn and other woody invasive plants that are crowding out valuable native species in our wooded areas. This information sheet addresses chemical control methods.

Before you begin killing buckthorn be absolutely certain that you have identified buckthorn correctly. You may feel that the whole woodland under-story is invaded with buckthorn, but there are many native species that are routinely being mistaken for buckthorn and removed. Too often workers are “throwing the baby out with the bathwater.” Valuable remnant woody plants that are regularly confused with buckthorn are: American plum, choke cherry, black cherry, hawthorn, nannyberry, gray dogwood, and others. “Brushing” is not an acceptable control method for buckthorn, because areas with disturbance are susceptible to further invasive species invasion and erosion. Ask for help with native remnant plant identification. Even the smallest native plants can bounce back if properly protected after being released from buckthorn.

Time to Apply Chemicals
For larger buckthorn control or reduction projects, some type of chemical treatment is the most efficient control method. Do not use herbicide during the spring-flush growth period. This is a time when the sap is running and the plant is using its stored energy reserves to grow—in the Twin Cities usually May to July. During the spring-flush, the plant generally does not store energy, it spends energy. Herbicide treatments work best when the plant is dormant or transporting sugars to its root system (storing energy). Summer, autumn and winter are the three seasons when chemical treatment of buckthorn is most effective. Late September through November is an especially good time, because buckthorn is easy to identify when its leaves remain green and attached while leaves of native plants are turning color and falling.

Cut-stump Treatment
Cut stems low (1 to 2 inches), because taller stumps are a tripping hazard and are more likely to re-sprout after herbicide is applied. While cutting and brush-hauling, stumps are easily lost under leaves, debris or snow. Marking stump locations with wire flags (similar to those used by utilities) is helpful in small areas when it comes time to locate the stump for treatment. Secure the flags well, so they will not be dragged away with the brush. Apply herbicide to the full circumference of the outermost growth rings of the fresh-cut stump surface soon after the cut for best absorption.

Stumps can be safely treated with a wick applicator. Two examples are:
1). 7-inch hand-held dauber (Buckthorn Blaster™) http://www.landscape-restoration.com/index.php/products
2). 4.5-foot PVC applicator for large-scale jobs (email Janet at jvansloun@eminnetonk.com for a materials list for building one). See herbicide recommendations next page.

Two Methods leave the buckthorn standing in place: Both involve less cutting labor on larger trees and stop female trees from producing fruit (that contain seeds). Standing dead buckthorn can provide habitat and be a structural frame for native vines to climb, such as woodbine (Virginia creeper), American bittersweet, moonseed, or wild grape. Once dry, standing dead trees can be cut and used for firewood or wood-working or left to break down on site.

Frill Cuts with Herbicide. Frill cuts are practical on larger stems and are made by wounding the bark at the base of the trunk with a hatchet (a butcher knife will work on smaller stems). Just above the soil line, make shallow cuts downward through the bark and cambium with a series of light chops around the circumference of the tree. These cuts create a frill (bark & wood flap). Apply herbicide with a paint brush or spray inside exposed cut areas. Chemical contact with the cambium (the layer just under the bark) is very important.

Basal Bark Treatment. When mixed with a diluent (a solvent sometimes containing dye that can be mixed with some herbicides), ester formulations of Triclopyr can be applied directly to the bark and provide effective control. This is a fast, effective way of controlling larger trees from 1 to 6 inches in diameter on large sites. Spray or wick-apply herbicide to 1.5 vertical feet of bark around the entire circumference of the tree. For diameters less than 2 inches, only one side of the stem needs to be treated. Consider a wick applicator to reduce over-spray when treating smaller diameter plants. An ultra-low volume spray wand can cut chemical use by 75%. As of Feb. 2016, find one here: http://www.arborchem.com/products/1095.html.

Herbicides that work well on buckthorn:
Do not use more chemical than recommende. If a little is good, a lot is not better. Here are specifics.
• **Glyphosate** is a good water-based herbicide with no soil residual or leaching. It is the active ingredient in several popular herbicide brands and other generic-type brands. Look for this ingredient in the lower label box.

• **18 to 25% active ingredient is needed for cut-stump and frill treatments.** Many different concentrations are available. The concentration is also in the lower label box.

• Apply to a fresh cut when temperatures are above freezing.

• About 6% active ingredient is necessary for **foliar** spray control (best for seedlings in mid-October in MN, after the native plants have dropped their leaves).

• There is NO NEED TO DRILL HOLES in the stump and pour chemical as some labels suggest—this over-exposes you and the environment to herbicide.

2. **Triclopyr ester** is the active ingredient in Garlon 4, Crossbow & Pathfinder II (ready to use).

• Mix with diluent or Kerosene, according to label instructions, for **basal bark** treatments

• Can be used when the temperature is below freezing

• Can be used long after the cut, because it will penetrate the stump and bark.

**Herbicide for wet sites:**

For areas within ten feet of the shoreline of ponds, creeks, lakes or wetlands, you must use an herbicide labeled for aquatic use. Products such as Aqua Neat or Rodeo contain glyphosate and ingredients approved for aquatic use. Use the same glyphosate active ingredient rates as above.

**Tips for spraying:**

1. In densely infested areas, consider a hand-held tank sprayer, because backpack sprayers can be difficult to negotiate through the woods.

2. An ultra-low-volume spray wand can cut chemical use by 75%.
   

3. Wear appropriate personal protective equipment (PPE) when using herbicides, especially when mixing concentrate. Use neoprene or chemical resistant gloves (not latex, cloth or leather). Wear goggles or safety glasses. Read and follow label instructions.

**Where to buy herbicides:**

• Glyphosate herbicides are readily available at hardware stores, Menards, Home Depot, etc. Be certain to look for an active ingredient concentration between 18 & 25% for cut-stump and frill treatment uses.

• Tryclopyr ester can be purchased through local agriculture, turf and horticulture co-op suppliers or wholesalers.

**Top 3 buckthorn reduction priorities:**

• Prioritize quality wooded areas that are only partially infested prior to more degraded areas.

• Survey your site to find pockets of remaining native plants. Sometimes these natives are very small, but they are worth protecting.
   
   o Use colored ribbon flagging to mark the native plants
   
   o Mark the natives in the fall when they turn color or find a local native plant expert to help you with identification.
   
   o Clear around the native plants first. When doing this you “release” these species from their buckthorn competition. When freed, they can bounce back with new growth.
   
   o Protect the native species from being harmed by deer and rodents with fencing, tree guards or spirals.

• Prioritize female buckthorn with berries for first-removal. Mark the female plants whenever fruit is visible; spray paint works well. Removing females stops annual seed production. Bag or burn fruit if possible.

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