

***An MDA Pest Alert***

# Buckthorn and its Control

## Introduction

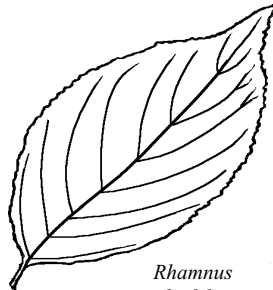
There are three buckthorn (*Rhamnus*) plant species found growing in Minnesota: *R. alnifolia* or **dwarf alder**, *R. cathartica* called **common** or **European buckthorn** and *R. frangula* also known by the common names **glossy**, **fen** or **alder buckthorn**.

Of the three species, only glossy buckthorn has cultivars in the nursery trade. Cultivars noted: 'Asplenifolia' the fernleaf buckthorn, 'Columnaris' or columnar buckthorn, and 'Tallcole' called tallhedge buckthorn.

## Species

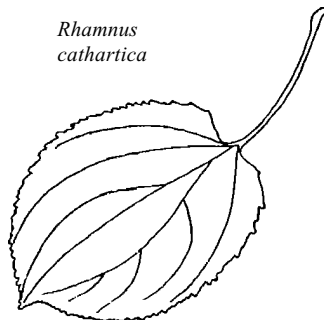
### Dwarf alder (*R. alnifolia*)

is native to the northern half of Minnesota as far south as the Twin Cities. It is a small shrub, four by four feet, found typically in tamarack swamps and wet meadows. It is not considered invasive within its natural range. There are no selections of dwarf alder in the nursery trade.



*Rhamnus alnifolia*

**Common or European buckthorn (*R. cathartica*)** is native to Europe and was brought to Minnesota in the mid-1800's as a hedging material. In Minnesota, it is the most problematic buckthorn species. Readily invading woodland understories



*Rhamnus cathartica*

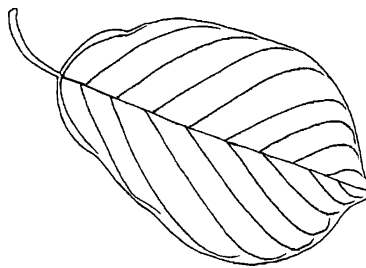
and field/prairie edges, it is both drought and shade tolerant. This species is rapidly spread by birds feeding on it's fruit. It has not been sold in the nursery trade since the 1930's.

Common buckthorn grows to a height of 20 feet with a spreading, irregular crown. The bark is rough gray/brown, similar in appearance to *Prunus sp.* The 3/8 inch glossy black fruit is borne in dense clusters at twig axils. Twigs have sub-opposite buds and a notable spine at tip. Leaves are elliptic, finely toothed, pointed and glossy dark green. Two strong diagnostic characteristics of buckthorn are the prolific berry clusters and leaves that stay dark green on the tree well into winter, long after natives have turned color and shed their leaves.



*Rhamnus cathartica*  
twig tip.

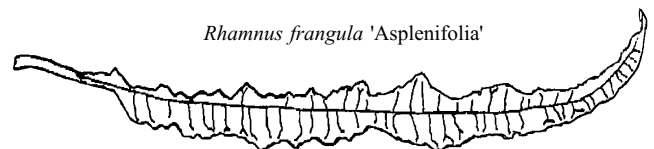
**Glossy buckthorn (*R. frangula*)** is from Europe. While drought tolerant its bad reputation comes from its tendency to aggressively invade wetlands and moist woodlands. In height and width it is similar to common buckthorn. While leaves are similar in size and shape, venation is pinnately netted and buds are alternate. There is no spine at twig tips. The red fruit turns black at maturity and



*Rhamnus frangula*

is consumed by birds which can deposit seed great distances.

Columnar cultivars in the nursery trade are narrow, upright to 12 feet. 'Asplenifolia' is fine textured, grows to a height of 12 feet and has a spreading crown.



*Rhamnus frangula* 'Asplenifolia'

## Control of Buckthorn

Buckthorn management is labor intensive and effective control is difficult without some herbicide usage. Control strategies can include one or more of the following: cut stump treatments, basal bark treatments, foliar treatments, fire, crown removal and mechanical removal. Best management practices have not been developed for buckthorn control.

**Cut stump treatments** have utilized the following herbicide products: Tordon RTU, Garlon, and Roundup. These formulations are typically available only from farm/industrial chemical dealerships. All products listed here can be purchased without a special license but container size is not practical for smaller applications.

**Misuse of pesticides can injure applicator and/or damage the environment. Always READ THE LABEL before applying! Know what you are doing before using any chemical. Use proper equipment that is in good working condition. Wear proper protective gear.**



**Tordon RTU** is a nonrestricted use herbicide packaged in 1 gal. containers. Active ingredients - picloram, (5.4%) and 2,4-D, (20.9%).

*Application:* Use brush or wick applicator. Good quality brushes hold liquid better, foam brushes quickly disintegrate. Cover outer cambium layer completely. Application by pressure sprayer may greatly increase nontarget impact. Avoid over application.

*Advantages:* ready to use (no mixing), relatively inexpensive per container size, high efficacy, year round use.

*Disadvantages:* picloram moves readily in soil, is highly toxic to non-target plants, is a major groundwater contaminant and persists in the environment.



**Garlon 3A** is a nonrestricted use herbicide packaged in 2.5 gal. containers. Active ingredient - triclopyr (44.4% amine salt).

*Application:* Always wear protective eye gear (serious eye risk). Applied undiluted using a brush or wick applicator or low volume spray. A blue dye marker in solution will mark treated stumps.

*Advantages:* more cost effective on large acreage, amine salt formulation stays put, high efficacy, year round use.

*Disadvantages:* poses health risk (serious eye injury), must be mixed (water, dye), cost per gallon and container size makes use impractical unless acreage is large. Homeowners wishing to treat a small number of plants can purchase triclopyr as Ortho's "Brush-B-Gon".



**Roundup/Rodeo** is a nonrestricted use herbicide packaged in 1 gal. containers. Active ingredient - glyphosate (roundup, 41.0%; rodeo, 53.8%).

*Application:* Dilute 1 part product to 3 parts water, add spreader sticker and dye. Apply to all stump surfaces above ground with pressure sprayer. Apply when temperature is above 32 degrees F. Applied within 24 hours of cutting.

*Advantages:* less environmental/user risk.

*Disadvantages:* low efficacy reported, must be mixed (water, dye, spreader sticker), moderately expensive, will not work if applied during bud break and leaf expansion in spring.



**Crown removal** without chemical treatment temporarily eliminates fruit production; however stumps will resprout profusely. If used in conjunction with fire, several growing seasons may be required for adequate fuel buildup to sustain a hot burn. Resprouting stumps can also be treated with foliar sprays in following seasons.

**Basal bark treatment** is the application of a chemical to the lower bark of the tree. Garlon 4 is preferred for this application.



**Garlon 4** is nonrestricted use and comes in 2.5 gal. containers. Active ingredient - triclopyr 61.6% (ester).

*Application:* Dilute 1 part product to 4 parts diluent oil. Apply with low pressure sprayer with ultra low volume wand using a Y-2 or Y-3 nozzle. Completely encircle basal 10" of tree trunk, leaving no gaps. Thoroughly wet bark but NOT to point of runoff. Colder temperatures may adversely affect spray pattern. Read label for other applications using Garlon 4 including cut stump treatments.

*Advantages:* doesn't require cutting top of tree off, price is more cost effective with high usage, lower user risk (does not carry same eye risk as Garlon 3A), high efficacy, season long use.

*Disadvantages:* container size not practical for small applications, must be mixed (oil diluent), ester formulation may volatilize and cause off site damage to non-target plants in hot weather.



**Foliar Treatments:** Broadleaf herbicides labeled for woody brush control can be effective against buckthorn seedlings and stump sprouts. Careful survey for desirable species within a control area should be considered before application.



**Krenite S** is a brush control agent containing fosamine 41.5%. Mode of action is inhibition of bud break the following growing season after treatment. In buckthorn control the theory is to spray green foliage (ideally seedlings) late in season after desirable species have turned fall color. Hennepin Parks reports zero to poor control in late season application trials. Distributor will further study application and efficacy.

**Fire** is an effective tool for controlling woody plant species. Fire is a suppression tool, though repeated burns may exhaust the weak rooted buckthorns' ability to compete and result in mortality. The use of fire is most effective against seedlings and small saplings.

Heavily colonized understories often have too little fuel to sustain a hot burn. Preplanning & preparation for a burn in public areas can be more costly than anticipated. Be aware of all local and state fire codes, permits, ordinances, etc.



**Mechanical removal** is not practical on large heavily colonized acreage. Where plants are sparse it can be the most expedient and environmentally friendly course of action. Larger trees can be readily dug, pulled and chopped out of the ground. Buckthorn does not readily resprout from underground roots. Buckthorn typically has thin wiry roots and in most woodland soils it pulls quite nicely up to 3/8" caliper.



**Biological controls** are not available for buckthorn at present.

**Author:**

Peter M. Dziuk  
Pest Management Unit, MDA

**Reviewed by:**

Charlie Evenson  
Natural Resources Mgt., Hennepin Parks

John Sierk  
Ag Chem Registration Unit, MDA

**Design and Layout:**

Peter M. Dziuk  
Pest Management Unit, MDA

*This fact sheet summarizes most recent control methods used by field practitioners.*

---

**Read the pesticide label and follow the instructions as a final authority on pesticide use.**

© 1998 Minnesota Department of Agriculture

DEV. 1/98

The information given in this publication is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Minnesota Department of Agriculture is implied.

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Agriculture (MDA) is available to all individuals regardless of race, color, religion, national origin, sex, creed, marital status, veteran status, status with regard to public assistance, political opinion or affiliation, age, disability or sexual preference. Discrimination inquiries should be sent to MDA Affirmative Action, c/o Administrative Services Division, 90 West Plato Boulevard, St. Paul, MN 55107-2094.

In accordance with the Americans With Disabilities Act, an alternative form of communication is available upon request. TTY: 1-800/627-3529