

**Natural Resources Conservation Service (NRCS) - Minnesota**



Common buckthorn  
Chris Evans, The University of Georgia, <http://www.invasive.org>



Garlic mustard  
Chris Evans, The University of Georgia, <http://www.invasive.org>

### **Purpose**

The purpose of this technical note is to identify invasive species and noxious weeds in Minnesota, provide general information for controlling or managing these harmful plants, and options to prevent new infestations from establishing.

### **Definitions**

The majority of plant species brought to Minnesota (described as nonnative, nonindigenous, alien or exotic) do no harm and many are beneficial. Native plants may be noxious or nuisance to humans or livestock, such as jimsonweed or poison ivy. Invasive plants, native or exotic, spread beyond acceptable limits and can literally take over a site to form pure colonies. Lack of natural controls such as insects, diseases, predators and/or competition enable these species to thrive at the expense of valuable crops and natural communities. Ecologically and economically it is important to control invasive species before they impact an area beyond reasonable control and restoration efforts.

Invasive species and noxious weeds are separate categories of harmful plants. While both can adversely impact native ecosystems and farmland, invasive species tend to spread aggressively resulting in reduced diversity while noxious weeds do their harm not only by population density but also cause harm through poisons, allelopathy, thorns, alternative hosts to insects or diseases and unpalatability to livestock.

### **Invasive Species**

USDA defines invasive species as those (plant) species whose introduction does, or is likely to cause significant negative impacts either economic or environmental and that do not provide an equivalent benefit to society. In the National PLANTS Database there are about 330 Genera of federally listed invasive species nationwide. In Minnesota invasive (plant) species dominate natural communities causing ecological or economic problems.

## **Noxious Weeds**

Noxious weeds are plant species designated as such by the Secretary of Agriculture, Secretary of the Interior, or by State or county law. Noxious weeds, by law or regulation, must be controlled or eradicated. Minnesota designates plants as noxious weeds because they are found to be injurious to public health, the environment, public roads, crops, livestock and other property. Noxious weeds may be native or exotic.

## **Policy**

National NRCS policy defines invasive species as those listed on an official county, state, or Federal noxious and/or invasive species lists. Species appearing on these lists will not be recommended in any NRCS developed conservation plan. The following is the official Minnesota Department of Agriculture (MDA) state listing of noxious plants. By policy this is also the official Minnesota NRCS list of invasive plant species.

## **MDA Prohibited Noxious Weed List**

(Must be controlled as per MN statutes)

### Eradicate List

Yellow Starthistle  
Grecian Foxglove  
Oriental Bittersweet

### Control List

Purple Loosestrife  
Garlic Mustard  
Leafy Spurge  
Canada Thistle  
Musk Thistle  
Plumeless Thistle  
Wild Parsnip  
Common tansy  
Spotted Knapweed



Glossy buckthorn  
Gil Wojciech,  
Polish Forest Research  
Institute  
<http://www.invasive.org>

## **Restricted Noxious Weeds:**

(Minnesota statute prohibits the importation, sale and transportation of these plants or their propagating parts in the state.)

Common (European) Buckthorn (*Rhamnus cathartica*)  
Glossy Buckthorn and all cultivars (*Frangula alnus*)

## **Specially Regulated Plants**

(Plant specific management plans and/or rules that define the use and management requirements for these plants will be developed by MDA for each plant designated as specially regulated.)

Poison Ivy

## **County Noxious Weeds**

County Noxious Weeds are plants that are designated by individual county boards to be prohibited within the county's jurisdiction and must be approved by the Commissioner of Agriculture, in consultation with the Noxious Weed Advisory Committee. Each county board must annually submit their proposed County Noxious Weed List to the Minnesota Department of Agriculture for review. Approved County Noxious Weeds shall also be posted with the county's

general weed notice prior to May 15<sup>th</sup> each year. Counties are solely responsible for developing County Noxious Weed lists and their enforcement.

### **Additional species of concern in MN**



Amur maple  
Paul Wray,  
Iowa State University  
<http://www.invasive.org>

Listed below are additional plant species of concern as collected by the Minnesota Department of Natural Resources (DNR). Although these species are not considered invasive by NRCS care should be taken when considering the use of these plants. Some plants in the table are valuable for effective agricultural and pasture or forage management. When these plants are not part of a valuable agricultural use of the operation being planned, or in the immediate vicinity, landowners should be strongly encouraged to use other alternative vegetative options.

MnDNR's "Invasive terrestrial plants"

(Fact sheets about these species can be found on the MnDNR webpage:

<http://www.dnr.state.mn.us/invasives/index.html>)

Amur maple

Amur silver grass

Birdsfoot trefoil

\*Black locust

Butter and Eggs (Toadflax)

Cow, Crown and hairy vetch (axseed)

Creeping Charlie

Exotic honeysuckles

Flowering rush

Hoary alyssum

Japanese barberry

Japanese knapweed

Norway maple

Orange hawkweed

Oxeye daisy

Queen Ann's lace

Reed canary grass

Russian olive

Siberian elm

Siberian peashrub

Smooth brome grass

White and yellow sweet clover

Yellow iris

\* MN native specie

## Control Management Options

Eradicating an established community of invasive plants is extremely difficult, very expensive and may be impossible. Controlling infestations to a moderate level is more reasonable yet still can prove to be difficult and costly. The most successful programs involve intimate knowledge of the species' life cycle and striking it at the most vulnerable point. For example, to control common buckthorn (*Rhamnus cathartica*) removal of stumps or stems and application of herbicides to the exposed cuts is most effective during mid- to late fall when buckthorn is still active and its leaves are green. At this time most native plants are either dormant, in fall colors or leafless.



Common Tansy  
Michael Shephard, USDA Forest Service,  
<http://www.invasive.org>

In general there are four control methods: mechanical (including manual), prescribed burn, chemical and biological. Effective management programs use one or more methods as appropriate. No matter what method is used, care must be taken to avoid or limit harm to the native species and plant communities that are present and can provide a ready source of revegetation. Applying a broad spectrum herbicide on an infested area may eradicate the invasives, but it may also cause great harm to native plants and the environment at large.

NRCS Conservation Practice Standard Pest Management, Code 595, for cropland only; Brush Management, Code 314 for controlling woody plants and Herbaceous Weed Control, Code 315 for controlling herbaceous weeds are available for non-croplands; and Prescribed Burning, Code 338 can also be used to control or manage woody or herbaceous weeds. Other conservation practices may be used as appropriate to help recover damaged areas such as Upland Wildlife Habitat Management, Code 645; Wetland Wildlife Habitat Management, Code 644; Restoration and Management of Declining Habitats, Code 643, Forest Stand Improvement, Code 666; Conservation Cover, Code 327 and Critical Area Planting, Code 342; other practices may be used as appropriate.

### Mechanical Treatment

Mechanical treatment physically removes small stems and roots manually or with a tool. Pulling, grubbing, wrenching, girdling and grinding (if not a suckering species) are mechanical techniques for removing woody plants. Repeated mowing before seed set is an effective treatment with herbaceous species.

#### Considerations:

As with most of these treatments, mechanical methods take lots of time, human resources, tools, transportation and a means to remove or destroy the waste materials. Mechanical treatments leave no chemical residues and with careful application do not damage existing plants. Pulling and grubbing works best on herbaceous species while weed wrenches are suited for plants with woody stems no more than 1-2 inches in diameter. Girdling the trunk of larger woody plants produces little waste, does not disturb nearby plants and may enhance wildlife by providing snags and nesting habitats. Mowing is most effective on annuals that will not resprout or on herbaceous species that do not sprout from cut pieces. Disadvantages of these treatments include leaving pieces or roots



Weed wrench  
Craig Stange, NRCS forester,  
using a weed wrench on Siberian  
elm. FEP, Becker, MN.

enabling sprouts, creating openings for other plants to invade and accidental spreading of seeds. These methods are most effective in small newly infested areas and in areas isolated from repeat infestations.

### **Prescribed Burn**

Burning prairies and savannahs on a regular basis, about every 3 years, will control woody invasive plants and some herbaceous invasives. In some cases burning may favor herbaceous invasives. It is important to be familiar with the ecosystem types and species and to control the burn intensity for maximum effect.

Considerations:

Prescribed burns are quick and effective in eradicating invasive woody plants usually without harming prairie or savannah ecotypes. However, some invasive species benefit from prescribed burns while this method can harm some native plants. Keep in mind that neighbors may object to the smoke of a prescribed burn. This method is best used in remote and large open areas that have a severe infestation of invasive species and other methods are not practical.

### **Chemical Treatment**

Chemical treatments include herbicides or other poisons applied to unwanted plants or infested areas. Treatments include wicking or painting whole plants, leaves or the cambium layer on a cut stump, spraying an herbicide on a wounded trunk or stem, spraying the entire perimeter of a trunk from the ground to 18” high, using foliar sprays or a broadcast spray. For further information about pesticide use follow the guidelines in the NRCS Conservation Practice Standard Brush Management, Code 314 or Forest Stand Improvement, Code 666.

Considerations:

Using the right chemical at the right time in the right place will cause little harm to the environment. Wicking or painting an approved chemical is economical and it effectively kills the plant or keeps it from sprouting. Disadvantages of this treatment include cost of chemicals and application, persistent residues from chemical use or spills and the chemicals used can harm non-target species, humans, livestock or wildlife. Repeat treatments may be necessary to provide effective control or eradication. Since this treatment is expensive and highly regulated, use it on small areas with a light infestation or on concentrated areas with a severe infestation.

### **Biological Treatment**



Biological Control  
Beetles imported to control  
purple loosestrife

Releasing insects, fungi or bacteria onto the invasive plant or in an infested area is a long term solution that attempts to control the spread of the invasive plant without chemical residues, burning or waste materials. Biological controls are very complex, heavily regulated and monitored. Check the Minnesota DNR web site to find out more about this treatment.

Considerations:

Natural predators that have been tested and brought over from the native source of the invasive plant are effective controls. It takes many years of tedious studies to locate and isolate native predators and to check that they do not attack native plants, which always remains a possibility.

Effective population numbers take many years to build up to see any measurable decline in the invasive species population, however once established the predator-prey balance would keep the invasive plants in control.

### **Post Control Management and Restoration**

Areas newly freed from invasive species may need to be restored to desirable species. Additional treatments of any of the above methods may also be necessary to keep cleaned areas free of new infestations. Scouting treated areas on an annual basis will catch new infestations and treatment can be immediately applied before the environment is harmed.

### **Protection**

Most invasive species colonize areas that lack a healthy, stable ground cover such as eroding ditches or road-sides and in poorly managed areas such as old fields and degraded pastures. Fence rows and edges between open areas and woodlands are also notorious sites for new infestations. Maintaining good plant cover on all the areas in the landscape will retard invasive species colonization. Taking immediate action to eradicate invasive plants when they are small and before they set seed is very effective and inexpensive.

Preventing the establishment of invasive and noxious plants is much cheaper than trying to eradicate an invasion. If a new invasive species is suspected contact the MDA's Arrest the Pest Hotline at 1-651-201-6684 (metro) or 1-888-545-6684 (out-state).

### **Resources**

NRCS Policy regarding invasive species  
GM Title 190, Part 414 – Invasive Species, Subparts A-D  
<http://directives.sc.egov.usda.gov/RollupViewer.aspx?hid=17018>

National Invasive Species Council  
<http://www.invasivespecies.gov/>

National Invasive Species Management Plan  
[http://www.invasivespecies.gov/main\\_nav/mn\\_NISC\\_ManagementPlan.html](http://www.invasivespecies.gov/main_nav/mn_NISC_ManagementPlan.html)

MN Department of Natural Resources  
State invasive species fact sheets  
<http://www.dnr.state.mn.us/invasives/index.html>

Minnesota Department of Agriculture  
Noxious and Invasive Weed Unit  
<http://www.mda.state.mn.us/en/plants/pestmanagement/weedcontrol.aspx>

Interagency U.S. invasive species information system  
Species profiles, geographic information, vectors and pathways,  
laws and regulations, and more.  
<http://www.invasivespeciesinfo.gov/>

USDA Plants Database, Plant Topics, Invasive and Noxious  
Search for federal and state lists of invasive plants  
<http://plants.usda.gov/java/>



Bull thistle  
Britt Slattery, U.S. Fish and Wildlife  
Service, <http://www.invasive.org>



Creeping Charlie, Ground ivy or  
Gill-over-the-ground  
Jill M. Swearingen, USDI National Park  
Service,  
<http://www.invasive.org>

Invasive and Exotic Plant Species Image Collection  
Images of invasive and exotic weeds, insects and diseases world-wide  
<http://www.invasive.org>

Weeds Gone Wild (Alien plant invaders of natural areas)  
Fact sheets, lists, publications, articles  
<http://www.nps.gov/plants/alien/>