

HOME HORTICULTURE

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MICHIGAN STATE
UNIVERSITY
EXTENSION



Michigan
Groundwater
Stewardship
Program

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Information Packet was Compiled from the Michigan State University Home Horticulture Database.

Deer Damage Control in Yards (Yard garden, yard ornamental, yard orchards)

When deer browse woody trees and shrubs in winter, the buds, leaves and stems that they eat may be quickly regrown by the plant in spring. If the plant suffers no loss of form, growth and production because of this regrowth, then no control is needed. If, however the injury caused by deer browsing produces a plant that is either less attractive, productive, or valuable, then damage control is necessary. The following methods can be used as damage control:

1. Cultural: Where possible, select plant species that deer rarely browse. In Michigan there are certain species of plants that deer seldom damage:

Woody plants rarely damaged may include:

Berberis spp. (Barberry)
Buxus sempervirens (Common boxwood)
Elaeagnus augustifolia (Russian olive)
Picea pungens (Colorado blue spruce)
Forsythia spp. (Forsythia)

Herbaceous plants & perennial flowers that are rarely damaged may include:

Allium spp. (Allium)	Iris spp. (Iris)
Dicentra spp. (Bleeding heart)	Lavandula anustifolia (Lavender)
Dendranthema spp. (Chrysanthemum)	Liatris spicata (Gay-feather)
Aquilegia spp. (Columbine)	Salvia spp. (Sage)
Coreopsis spp. (Coreopsis)	Lychnis (campion)
Achillea spp. (Yarrow)	Lupinus polyphyllus (Lupine)
Linum perenne (Flax)	Narcissus spp. (Narcissus)
Digitalis spp. (Foxglove)	Convallaria majalis (Lily-of-the-valley)

Other plants that are seldom damaged may include:

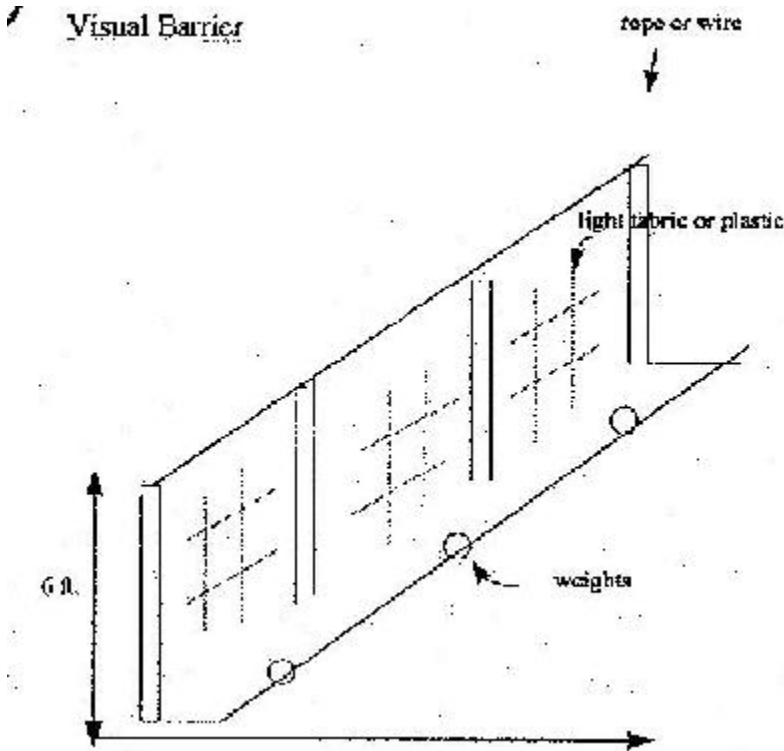
Cornus sericea (Red osier dogwood)	Pinus resinosa (Red pine)
Calostrus scandens (American bittersweet)	Juniperus virginiana (E. red cedar)
Fagus (Beech)	Juniperus chinensis (Chinese junipers)
Gleditsia triacanthos (Honey locust)	Syringa vulgaris (Common lilac)

These plant names are on lists that also include *Pinus resinosa* (Red pine), *Pinus sylvestris* (Scots pine), *Cornus florida* (Flowering dogwood), *Picea abies* (Norway spruce), and *Tulipa* spp. (Tulip), as seldom damaged by deer. However, these species are consumed vigorously by deer in Michigan especially in winter. Therefore, beware of any list indicating plants seldom damaged by deer. Deer, especially hungry deer, will browse on almost any plant that is well fertilized, watered, and mulched.

2. Exclusion: Small individual plants in yards and gardens are best protected by encircling them with welded wire no larger than 2 X 4 inch mesh. Use smaller mesh to also exclude rabbits (1/2" mesh) and mice (1/4" mesh).

Encirclements of less than 18 inches in diameter need little or no extra support. Larger encirclements of plants or group of plants need stakes for support and may not be practical because of the difficulties of construction, takedown and storage. Encircling wire should be at least 5 feet high.

Another type of exclusion is a visual barrier ([Vis. 1](#)) about 6 feet in height. Deer will not be able to see the garden vegetation and thus will not be attracted to it. A light fabric or plastic (i.e. burlap, cotton woven plastic, plastic sheets, or plastic clothes) will provide the visual barrier to keep deer away. Vertical edges of the plastic or fabric must be fastened together without gaps, and bottom edges must be weighted down.



3. Repellents: An excellent repellent in late summer and winter is Deer-Away which will provide almost 100% protection from 3 weeks to 3 months, depending on the number of deer, their hunger and their alternative food choices. Re-application renews effectiveness. Lightly spray or dust all parts of the plants to be protected. The liquid spray must be used when temperatures are above freezing and the dust must be applied when the plant is moist with rain, dew or frost. Apply 1 tablespoon or less to each tree. Do not use on shrubs or trees when the leaves or needles are young, growing, and succulent. Because of the limited effectiveness, Deer-Away is best used where deer damage problems are of short duration e.g. spring sprout browsing, fall antler rubbing.

Hinder can be used to repel deer from all garden vegetables, flowers, and Christmas trees. Although very effective, it must be reapplied every 2 weeks or after every rain. Mix according to label directions. Apply to the vegetation to be protected and all nearby surrounding vegetation. Again, because of the limited time of effectiveness, Hinder is economically feasible only when deer damage problems are of short duration.

Other repellents such as feather meal, meat meal, soap, etc. may provide close to 100% protection for 30-90 days during the warm months (April-October) if sprinkled lightly around and on the garden vegetation; re-apply weekly. Small cloth bags of these repellents and small bars of soap when hung from trees and shrubs will repel deer from eating the trees and shrubs during the warm months. Hang these repellents from the outer branches on both sides of the plant. Renew every 90 days or more.

REPELLENT					
CONTENTS	BRAND NAME	USES	EFFECTIVENESS	DURABILITY	EFFECTIVENESS OF RENEWED APPLICATION
benzi diethyl ammonium saccharide thymol	Ro-Pel	spray on ornamental & non bearing fruit trees	0-50%	7-14 Days	Same or Less
denathonum benziaata (Bittex)	Tree Guard Mr. T's	spray on ornamental & non bearing fruit trees	50-75%	30-60 Days	Same
garlic	Plant pro-tec	spray on ornamental & non bearing fruit	90-100%	30-60 Days	Same
mixtures of above	Deerbuster	spray on ornamental & non bearing fruit	95-100%	30-60 Days	Same
cat urine & feces (lion urine, feces)	-----	Apply to area to be protected	50-75%	7-14 days	None
moth balls	-----	Apply to area to be protected	0-50%	3-14 Days	None
blood meal	-----	Apply to area to be protected	90-100%	3-10 Days (washes off with rain)	Same
human hair	-----	In 2 + cloth bags on woody plants or spread on ground around plants	0-50%	3-7 Days	Variable

Other repellents which may prove helpful include garlic (Plant-Pro Tee) and denatonum benzoata (Tree Guard).

REPELLENT					
CONTENTS	BRAND NAME	USES	EFFECTIVENESS	DURABILITY	EFFECTIVENESS OF RENEWED APPLICATION
feather meal	-----	in 2+ cloth bags on woody plants	90-95%	30-90 Days	Same
meat meal	-----	in 2 +cloth bags on woody plants	90-95%	30-90 Days	Same
meat meal/pepper	Greenscreen	in 2+cloth bags on woody plants	95-100%	30-90 Days	Same
soap bars	-----	2+ bars on woody plants	80-90%	30-90 Days	Same
soap bars	Greenscreen	2+ bars on woody plants	80-90%	30-90 Days	Same
liquidified eggs in water		spray on any plant	80-90%	3-7 Days	Same
putrescent whole egg solids	Deer-Away	spray or dust on ornamental and non bearing fruit trees	95-100%	21-42 Days	Same
ammonium hydroxide	Hinder	spray on any plants	80-95%	7-14 Days (washes off with rain)	Same
capsaicin	Hot Sauce	spray on ornamental and non bearing fruit trees	0-50%	15-30 Days	Same or Less
thiram	Science Selco Hopkins	spray on ornamental & non- bearing fruit trees	50-75%	15-30 Days 90 Days with Sticker	Same

Sources of Repellents

Deer-Away
County Mart
144 Hall St.
Traverse City, MI 49684
(616) 946-5836
cost:\$.05-.10/tree

Hinder
Leffingwell-Uniroyal Chem.
111 S. Berry St.
P.O. Box 1880
Brea, CA 92621

Middle Chem.Co.
Middlebury,CT 06749 (203) 573-3411
or most Growers Service Stores
\$20-\$30/acre.

Meat Meal Bags: (bags, powder of meat meal)

Green Screen
Lakeshore Enterprises
2804 Benzie Hwy.
Benzonia, MI 49616
(616) 882-9601
cost: \$.34/tree

4. Temporary fences: These fences are single strands of woven plastic tape and electric wires (poly tape, turbo wire) and have proven to be effective in excluding deer for 1 or more months. The wire must be capable of conducting at least 4,000 volts and should be suspended from temporary posts or stakes 2 1/2 feet above ground level. Effectiveness rarely lasts for more than 2-4 months but that may be sufficient for some crops. To renew effectiveness, bait the fence with 3'X4" foil pieces smeared with a 1:1 ratio of peanut butter and peanut oil spread. Hang the folded foil pieces on the charged wire and tape them closed. These foil flags serve as an attractive device to the deer, and as an alternative, roll the peanut butter and peanut oil spread directly upon the charged turbo wire. These techniques should provide effective protection against deer damage through the growing season. The fence must be removed after the threat of deer damage has ceased.

5. Electronic pet barriers: Dogs fitted with electronic shock collars and enclosed in an area by a wire that activates the collars have reduced deer damage dramatically. When using an electronic pet barrier, the following points are vital

- 1) Herding breeds of dogs (e.g. border collies) have been more reliable than confirmed deer-chasing mongrels, and two male dogs are more effective than females or a single dog.
- 2) The dogs must be trained to the wire initially, and housed and fed within the wire.
- 3) The wire that activates the shock collars does not have to be buried.
- 4) The number of dogs needed per unit of area is unknown. Two dogs have protected up to 150 acres of orchard. Long term effectiveness is unknown.

6. Electric fences: Fences effectively exclude most deer and efficiently control deer damage if built and maintained according to the specifications described below. However, this is not usually suitable for yard damage control, except in extreme cases. Improperly built and/or maintained electric fences are not effective. The most efficient configurations are the vertical 7-wire and slant 7-wire fences. Material costs for these fences are approximately \$1.00 and \$2.00 per foot. When installed by commercial builders, costs range from \$1.50 per foot to \$3.00 per foot. All costs vary according to length of fence installed and variation in terrain.

In most places in Michigan, the vertical 7-wire fence will provide the most efficient protection. In areas of high deer density, the slant 7-wire configuration should be used. In uneven terrain however, the slant 7-wire configuration is more expensive to build and the wide herbicide strip is subject to erosion. In northern Michigan, the slanted fence must be charged in winter or else the snow may pull it down.

Electric Deer Fence Specifications to consider are:

- 1) Clearing all vegetation away from the fence and use herbicides to keep vegetation off the fence. Vegetation touching the wires can reduce voltage enough to make the fence ineffective.
- 2) Use high tensile strength 12 1/2 ga. steel wire stretched to 200-250 lbs. Use in-line wire strainers and an indicator spring to achieve proper tension. Spacing between wires and ground must be properly maintained at all points.
- 3) Join wires with crimping sleeves - no knots or ties.
- 4) End posts, corner posts and brace posts should be 4-5 inch diameter pressure treated wooden posts sunk 3-5 feet into the ground.
- 5) Run wire outside corners. Use sleeve insulators.
- 6) Use a Gallagher New Zealand Style energizer (high voltage, low impedance) or its equivalent. The fence charger must maintain a charge of at least 4,000 volts over the entire length of the fence.
- 7) Wires are alternately charged and make sure all chargers are properly grounded.
- 8) Make the fence as long and straight as possible. Line posts 3 inches in diameter may be spaced as much as 150 feet apart if fiberglass or plastic spacing posts are used in between. Double brace end and corner posts on runs 500 feet or longer.
- 9) Check fence regularly to make certain that voltage is sufficient. Inspect fence regularly for weeds, fallen limbs and broken fence parts. Maintenance is essential!!!
- 10) When lower wire or wires become buried in the snow, disconnect them. Otherwise, the charge on the fence is reduced.
- 11) Keep the fence charged throughout the year. Uncharged fences seem to be broken and/or ignored by deer, making them less effective when charged.
- 12) When the fence crosses traditional deer trails, add 3 extra top wires 10-12 inches apart for 10 yards on either side of the trail. The 3 extra top wires do not need to be under tension or charged. In areas of high deer density (40 or more per sq. mile), 3 extra top wires should be added to all vertical electric fences where deer are likely to jump the fence.

Recent Successful Modifications

Two MSU experiment stations report excellent deer exclusion with a vertical fence where the spacing is 6 inches between the wires after the first wire, which is 10 inches above the ground. These fences may have 9 or

10 wires charged and additional uncharged wires spaced 12 inches apart above the 9th or 10th wire, if necessary to prevent jumping.

Manufacturers and Builders

Reed City Power Line Supply Co.	The Wright Place
420 Roth Street	5051 Fowler Rd.
Reed City, MI 49677-0205	Reading, MI 49274
(231) 832-2297	(517) 283-2645
Techfence	Invisible Fencing
Advanced Farm Systems, Inc.	PO Box 344
Rd. 1 Box 364	Leland, MI 49654-9986
Bradford, MA 04410	

Common Mistakes Made with Electric Fencing for Deer Damage Control

- 1) Failure to maintain an adequate charge (more than 4,000 volts) over the entire length of fencing and failure to use bi-polar charging.
- 2) Use of wooden posts where plastic or fiberglass spacers or posts are adequate.
- 3) Failure to maintain proper spacing between wires.

Recent Successful Modifications

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- 2) A charged trip wire can be attached to the posts of the slant electric fence to increase its effectiveness. The wire should be attached to the posts at a height of 2 1/2 feet.

Garden Plants-Severely Damaged

<u>Common name</u>	<u>Botanical name</u>
Beans	Phaseolus spp.
Broccoli	Brassica oleracea italica
Cabbage	Brassica oleracea capitata
Carrot	Daucus carota sativa
Cauliflower	Brassica oleracea botrytis
Kohlrabi	Brassica oleracea
Lettuce	Lactuca sativa
Peas	Pisum sativum
Spinach	Spinacia oleracea
Turnip	Brassica rapa

Garden Plants-Frequently Damaged

<u>Common name</u>	<u>Botanical name</u>
Beets	Beta vulgaris

Corn, sweet	Zea mays
Potatoes, sweet	Ipomoea batatas
Strawberries	Fragaria spp

Garden Plants-Occasionally Damaged

<u>Common name</u>	<u>Botanical name</u>
Asparagus	Asparagus officinalis
Okra	Abelmoschus esculentus
Potatoes, Irish	Solanum tuberosum
Radish	Raphanus sativus
Squash	Cucurbita pepo

Garden Plants-Rarely Damaged

<u>Common name</u>	<u>Botanical name</u>
Cantaloupe	Cucumis melo cantalupensis
Cucumber	Cucumis sativus
Eggplant	Solanum melongena
Hot peppers	Capsicum annuum
Onion	Allium spp.
Sweet peppers	Capsicum frutescens
Tomato	Lycopersicon esculentum
Watermelon	Citrulus lanatus

Herbaceous Plants-Annual Flowers Rarely Damaged

<u>Common name</u>	<u>Botanical name</u>
Ageratum	Ageratum houstonianum
Amaranth	Amaranthus tricolor
Castor bean	Ricinus communis
Cosmos	Cosmos bipinnatus
Chinese forget-me-not	Cynoglossum amabile
Cupflower	Nierembergia hippomanica
Dusty Miller	Senecio cineraria
Globe Amaranth	Gomphrena globosa
French Marigold	Tagetes patula
Lantana	Lantana spp.
Ornamental pepper	Capsicum annuum
Periwinkle	Catharanthus roseus
Polygonum	Polygonum capitatum
Salvia	Salvia viridis
Sanvitalia	Sanvitalia procumbens
Signet marigold	Tagetes tenuifolia
Snapdragon	Antirrhinum majus
Snow-on-the-Mountain	Euphorbia marginata
Spider flower	Cleome hasslerana
Stock	Matthiola incana
Sweet alyssum	Lobularia maritima
Wax begonia	Begonia semperflorens
Zinnia	Zinnia angustifolia
Zinnia	Zinnia elegans

Woody Plants-Occasionally Damaged

<u>Common name</u>	<u>Botanical name</u>
Basswood	Tilia spp.
American Basswood	Tilia americana
Greenspire Linden	Tilia cordata 'Greenspire'
Border Forsythia	Forsythia x intermedia 'Lynwood'
Common Witchhazel	Hamamelis virginiana
Cotoneaster	Cotoneaster spp.
Cranberry Cotoneaster	Cotoneaster apiculatus
Rockspray Cotoneaster	Cotoneaster horizontalis
Dawn Redwood	Metasequoia glyptostroboides
Eastern White Pine	Pinus strobus
Firethorn	Pyracantha coccinea
Goldflame Honeysuckle	Lonicera x heckrottii
Hollies	Ilex spp.
Japanese Holly	Ilex crenata
China Boy Holly	Ilex x meserveae 'China Boy'
China Girl Holly	Ilex x meserveae 'China Girl'
Hydrangeas	
Smooth Hydrangea	Hydrangea aborescens
Climbing Hydrangea	Hydrangea anomala petiolaris
Hydrangea	Hydrangea paniculata
Japanese Cedar	Cryptomeria japonica
Japanese Flowering Quince	Chaenomeles japonica
Lilacs	Syringa spp.
Japanese Tree Lilac	Syringa x reticulata
Late Lilac	Syringa villosa
Persian Lilac	Syringa x persica
Maples	
Paperbark Maple	Acer griseum
Red Maple	Acer rubrum
Silver Maple	Acer saccharinum
Sugar Maple	Acer saccharum
Panicled Dogwood	Cornus racemosa
Pears	Pyrus spp.
Bradford Pear	Pyrus calleryana 'Bradford'
Common Pear	Pyrus communis
Privet	Ligustrum spp.
Rhododendrons	
Deciduous Azaleas	Rhododendron spp.
Carolina Rhododendron	Rhododendron carolinianum
Rosebay Rhododendron	Rhododendron maximum
Rose of Sharon	Hibiscus syriacus
Roses	Rosa spp.
Multiflora Rose	Rosa multiflora
Rugosa Rose	Rosa rugosa
Saucer Magnolia	Magnolia x soulangiana
Serviceberries	
Downy Serviceberry	Amelanchier arborea
Allegheny Serviceberry	Amelanchier laevis
Smokebush	Cotinus coggygria
Oaks	Quercus spp.
Northern Red Oak	Quercus rubra
White Oak	Quercus alba
Spiraea	
Anthony	Waterer Spiraea Spiraea x bumalda

	'Anthony Waterer'
Bridalwreath Spiraea	Spiraea prunifolia
Staghorn Sumac	Rhus typhina
Sweet Cherry	Prunus avium
Sweet Mock Orange	Philadelphus coronarius
Trumpet Creeper	Campsis radicans

Viburnums

Judd Viburnum	Viburnum x juddi
Leather leaf Viburnum	Viburnum rhytidophyllum
Doublefile Viburnum	Viburnum plicatum tomentosum
Koreanspice Viburnum	Viburnum carlesii
Virginia Creeper	Parthenocissus quinquefolia
Weigela	Weigela florida
White Fir	Abies concolor
Willows	Salix spp.

Woody Plants - Frequently Damaged

<u>Common name</u>	<u>Botanical Name</u>
Apples	Malus spp.
American Arborvitae	Thuja occidentalis
Cherries	Prunus spp.
Clematis	Clematis spp.
Cornelian Dogwood	Cornus mas
Eastern Redbud	Cercis canadensis
English Ivy	Hedera helix
Hybrid Tea Rose	Rosa x hybrida
Norway Maple	Acer platanoides
Peaches	Prunus persica
Plums	Prunus spp.
Rhododendrons	Rhododendrons spp.
Catawba Rhododendrons	Rhododendron catawbiense
Evergreen Azaleas	Rhododendron spp.
Winged Euonymus	Euonymus alatus
Wintercreeper	Euonymus fortunei radicans
Yews	Taxus spp.
English Yew	Taxus baccata
Western Yew	Taxus brevifolia
Japanese Yew	Taxus cuspidata
English/Japanese Hybrid Yew	Taxus x media

Herbaceous Plants-Perennial Flowers Rarely Damaged

<u>Common name</u>	<u>Botanical name</u>
Allium	Allium spp.
Amsonia	Amsonia tabernaemontana
Baby's-breath	Gypsophila paniculata
Bleeding-heart	Dicentra eximia
Bleeding-heart	Dicentra spectabilis
Butterfly weed	Asclepias tuberosa
Chrysanthemum	Dendranthema spp.
Columbine	Aquilegia spp.
Coralbells	Heuchera sanguinea

Coreopsis	Coreopsis lanceolata
Coreopsis	Coreopsis verticilla
Flax	Linum perenne
Foxglove	Digitalis grandiflora
Foxglove	Digitalis purpurea
Gas Plant	Dictamnus albus
Gay-feather	Liatris spicata
Globe thistle	Echinops exaltatus
Golden marguente	Anthemis tinctoria
Grasses	many genera and species
Iris	Iris spp.
Lamb's ears	Stachys byzantia
Lavender	Lavandula angustifolia
Lavender cotton	Santolina chamaecyparissus
Lily-of-the-valley	Convallaria majalis
Lupine	Lupinus polyphyllus
Narcissus	Narcissus spp.
Oriental poppy	Papaver orientale
Rose campion	Lychnis coronaria
Sage	Salvia farinacea
Sage	Salvia officinalis
Sage	Salvia sclarea
Sage	Salvia splendens
Speedwell	Veronica spp.
Wormwood	Artemisia species
Yarrow	
'Coronation Gold'	Achillea filipendulina 'C.G.'

Herbaceous Plants-Perennial Flowers Frequently Damaged

<u>Common name</u>	<u>Botanical name</u>
Tulip	Tulipa spp.

Woody Plants-Rarely Damaged

<u>Common name</u>	<u>Botanical name</u>
American Holly	Ilex opaca
Barberry	Berberis spp.
Common Barberry	Berberis vulgaris
Colorado Blue Spruce	Picea pungens glauca
Common Boxwood	Buxus sempervirens
Loblolly Pine	Pinus taeda
Shortleaf Pine	Pinus echinata
Paper Birch	Betula papyrifera
Russian Olive	Elaeagnus angustifolia

Woody Plants-Seldom Damaged

<u>Common name</u>	<u>Botanical name</u>
American Bittersweet	Celastrus scandens
Beautybush	Kolkwitzia amabilis
Chinese Junipers (green)	Juniperus chinensis 'Pfitzerana'
Chinese Junipers (blue)	Juniperus chinensis 'Hetzi'

Common Sassafras	Sassafras albidum
Common Lilac	Syringa vulgaris
Corkscrew Willow	Salix matsudana'Tortuosa'
Dogwoods	
Chinese	Kousa
Red Osier Dogwood	Cornus sericea
Flowering Dogwood	Cornus Florida
Chinese Kousa Dogwood	Comus kousa
Eastern Red Cedar	Junipenis virginiana 'Canaertii'
English Hawthorn	Crataegus laevigata
Forsythia	Forsythia spp.
Hollies	
Chinese Holly	Ilex cornuta
Inkberry	Ilex galbra
Honey Locust	Gleditsia triacanthos
Japanese Flowering Cherry	Prunus serrulata
Japanese Wisteria	Wisteria floribunda
Norway Spruce	Picea abies
Pines	
Austrian Pine	Pinus nigra
Mugo Pine	Pinus mugo
Red Pine	Pinus resinosa
Scots Pine	Pinus sylvestris

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