

Black Walnut Toxicity



The black walnut (*Juglans nigra*) contains the phytotoxin juglone, which can cause stunting, death, or wilting in many plants when they are planted nearby. Juglone is present on the roots, leaves, fruits, and branches of the plant. Other species of the walnut family also contain juglone but in lesser concentrations. They are, in descending order of concentration: English Walnut (*Juglans regia*), butternut (*J. cineraria*), hickory (*Carya ovata*), and pecan (*C. illinoensis*). The average limit of the toxic zone from a mature tree is 50 to 60 feet, but plants as far away as 80 feet have also been injured. The use of black walnut sawdust, leaves, crushed husks as mulch or in compost can also have toxic results, especially on very susceptible plants such as the tomato. The black walnut is also used as rootstock creating the same toxic results by the roots. While some plants are susceptible to juglone, others are not and can even thrive in the area of black walnuts. The following lists plants, which have been shown to be susceptible and not susceptible to black walnut toxin. Plants appearing on multiple lists have exhibited variable results.

Plants Susceptible to Walnut Toxicity Trees:

Acer saccharinum (Silver Maple)

Aesculus octandra (Sweet Buckeye)

Amelanchier canadensis (Serviceberry)

Betula alba (White Birch)

Betula Lutea (Yellow Birch)

Betula nigra (River Birch)

Carpinus caroliniana (American Hornbeam)

Castanea dentata (Chestnut)

Diospyros virginiana (Persimmon)

Elaeagnus angustifolius (Russian olive)

Fraxinus americana (White Ash)

Fraxinus nigra (Black Ash)

Hamamelis virginiana (Witch-hazel)

Ilex opaca (American Holly)

Ilex verticillata (Michigan holly)*

Juglans cinerea (White walnut)

Magnolia acuminata (Cucumber Tree)

Magnolia soulangiana (Saucer Magnolia)

Malus hopa (Hopa Crabapple)*

Malus sp. (Apples)*

Morus rubra (Red Mullberry)

Pinus resinosa (Red pine)

Pinus rigida (Pitch Pine)

Pinus strobus (white pine)

Pinus sylvestis (Scotch pine)

Pinus taeda (Loblolly pine)

Prunus Americana (Wild Plum)

Prunus Pennsylvanica (Fire Cherry)

Quercus stellata (Post Oak)

Quercus coccinea (Scarlet Oak)

Salix nigra (Black Willow)

Sambucus canadensis (Common Elderberry)

Tilia americana (Basswood)

Tilia heterophylla (White Basswood)

Ulmus fulva (Slippery Elm)

Viburnum sieboldii (Siebold Viburnum)

Shrubs & Vines:

Alnus rugosa (Smooth Alder)
Aralia spinosa (Hercules' Club)
Aristolochia macrophylla (Pipe Vine)
Aronia arbutifolia (Red chokeberry)
Azalea sp. (Azalea)
Baptisia australis (Blue False Indigo)
Ceanothus americanus (New Jersey Tea)
Chionanthus virginica (Fringe-tree)
Cornus amomum (Silky dogwood)
Euonymus americanus (Strawberry bush)
Hydrangea sp. (Hydrangea)
Kalmia latifolia (Mountain Laurel)
Larix kaempferi (Japanese larch)
Ligustrum sp. (Privet)
Lonicera canadensis (American Fly Honeysuckle)
Physocarpus opulifolius (Nine-bark)
Pinus mugo (Swiss mountain pine)
Potentilla fruticosa (Shrubby Cinquefoil)
Prunus tomentosa (Nanking cherry)
Prunus subhirtella Pendula (Weeping Higan Cherry)
Prunus virginiana (Choke cherry)
Pyracantha sp. (Firethorn)
Rhododendron sp. (Rhododendron)*
Rhus canadensis (Fragrant Sumac)
Staphylea trifolia (Bladder Nut)
Syrina sp. (Lilac)
Viburnum dentatum (Arrow-wood)
Viburnum opulus (European Cranberrybush Viburnum)
Viburnum plicatum (Double File Viburnum)
Zanthoxylum americanum (Prickly Ash)

Herbaceous Plants/Bulbs:

Aquilegia caerulea (Colorado Columbine)
Aquilegia canadensis (Wild Columbine)
Chrysanthemum morifolium (Chrysanthemum)*
Habenaria lacera (Ragged fringed Orchid)

Heuchera spp. (Alumroot)
Lilium (Lily; Enchantment and other Asian Hybrids)
Narcissus (Narcissus, Daffodil; John Evelyn, Unsurpassable, King
Alfred, Ice Follies, All trumpet and large flat cupped)*
Paeonia sp. (Peony)
Rosa chinensis (Fairy Rose)
Rosa minima (Fairy Rose)
Tulipa (Tulip; Merry Widow, West Point)

Fruits:

Gaylussacia sp. (Huckleberry)
Rubus spp. (Blackberry)
Rubus odoratus (Purple Flowering Raspberry)
Vaccinium corymbosum (Highbush Blueberry)
Vaccinium sp. (Blueberry)

Vegetables/Crops:

Asparagus officinalis (Asparagus)*
Beta vulgaris (Sugar Beets)
Brassica oleracea var. capitata (Cabbage)
Capsicum annuum (Pepper)
Lycopersicon esculentum (Tomato)
Medicago sativa (Alfalfa)
Solanum melongena esculentum (Eggplant)
Solanum tuberosum (Potato)
Trifolium incarnatum (Crimson clover)

Plants Tolerant of Walnut Toxicity

Annuals:

Begonia Sp. (fibrous cultivars)
Begonia Nonstop (Tuberous begonia)
Ipomoea Heavenly Blue (Morning Glory)
Viola cornuta (Horned Violet)
Viola x wittrockiana (Pansy)

Bulbs:

Chinodoxa luciliae (Glory-of-the-Snow)
Endymion hispanicus (Spanish Bluebell)
Eranthis hyemalis (Winter Aconite)

Galanthus nivalis (Snowdrop)
Hyacinthus _City of Harlem_ (Hyacinth sp.)
Narcissus _Cheerfulness_ (Narcissus sp.)
Narcissus _Yellow Cheerfulness_ (Narcissus sp.)
Narcissus _Geranium_ (Narcissus sp.)
Narcissus _Tete a tete_ (Narcissus sp.)
Narcissus _Sundial_ (Narcissus sp.)
Narcissus _February Gold_ (Narcissus sp.)
Scilla siberica (Blue Squill)
Tulipa Darwin _White Volcano_ (Tulip sp.)
Tulipa Darwin _Cum Laude_ (Tulip sp.)
Tulipa Parrot _Blue Parrot_ (Tulip sp.)
Tulipa Gregii _Toronto_ (Tulip sp.)

Trees:

Acer negundo (Box Elder)*
Acer nigrum (Black Maple)
Acer palmatum (Japanese Maple)
Acer palmatum-Dissectum (Japanese Maple)
Acer rubrum (Red Maple)
Acer saccharum (Sugar Maple)
Aesculus glabra (Ohio Buckeye)
Ailanthus glandulosa (Tree of Heaven)
Asimina triloba (Papaw)
Betula lenta (Black Birch)
Betula nigra _Heritage_ (_Heritage_ River Birch)
Caraya sp. (Hickory)
Catalpa bignonioides (Common Catalpa)
Celtis occidentalis (Common Hackberry)*
Cercis canadensis (Redbud)
Cornus Florida (Flowering Dogwood)
Crataegus spp. (Hawthorn)
Cydonia oblonga (Quince)
Fagus grandifolia (Beech)
Gleditsia triacanthos (Honey Locust)
Halesia carolina (Carolina Silverbell or Opossum Wood)*
Juniperus virginiana (Red Cedar)

Koelreuteria paniculata (Goldenrain-tree)
Liquidamber styraciflua (Sweetgum)*
Liriodendron tulipifera (Tulip tree)
Nyssa sylvatica (Black Gum)
Oleaceae spp. (Autumn olive)
Picea abies (Norway Spruce)
Pinus jeffreyi (Jeffrey Pine)
Pinus virginiana(Scrub Pine)
Plantanus occidentalis (Sycamore)
Prunus serotina (Black Cherry)
Pyrus calleryana (Callery Pear)
Pyrus coronaria (American Crab)
Querus alba (White Oak)
Querus borealis (Red Oak)
Quercus imbricaria (Shingle Oak)*
Quercus rubra (Northern Red Oak)
Quercus ventutina (Black Oak)
Rhus hirta (Staghorn Sumac)
Robinia pseudoacacia (Black Locust)
Sassafrass variifolium (Sassafrass)
Thuja occidentalis (American arborvitae)
Tilia platyphyllas (Bigleaf Linden)
Tsuga canadensis (Canadian Hemlock)
Ulmus americana (American Elm)
Viburnum prunifolium (Black Haw)

Shrubs & Vines:

Berberis canadensis (American Barberry)
Benzoin aestivale (Spicebush)
Celastrus scandens (Climbing Bittersweet)
Clematis Sp. (Clematis _Red Cardinal_)
Clematis terniflora (Sweet Autumn Clematis)
Clematis virginiana (Virgin's Bower)
Cornus alternifolia (Alternate-leaved Dogwood)
Corylus Americana (Hazelnut)
Daphne mezereum (February daphne)
Euonymus europaea (European spindle tree)

Euonymus hamiltonianus (Yeddo Euonymus)
Forsythia spp.
Hibiscus syriacus (Rose of Sharon)
Hydrangea arborescens (Wild Hydrangea)
Hypericum prolificum (Shrubby St. John's-wort)
Kerria japonica (Kerria)
Kerria japonica _Pleniflora_ (Double-flower kerria)
Lonicera maackia (Amur honeysuckle)*
Lonicera tatarica (Tatarian honeysuckle)
Lonicera xylosteum (European fly honeysuckle)
Parthenocissus quinquefolia (Virginia Creeper)
Rhododendron periclymenoides (Pinxterbloom)
Rhododendron hybrid (Rhododendron Exbury _Gibralter_, Balzac)
Rhododendron hybrid (Rhododendron Exbury _Balzac_)
Psedera quinquefolia (Virginia Creeper)
Rhus glabra (Smooth Sumac)
Rhus copallina (Dwarf Sumac)
Rhus toxicodendron (Poison Ivy)
Ribes spp. (Currant)
Rosa spp. (Wild Rose)
Sambucus canadensis (Common or American Elderberry)
Smilax spp. (greenbrier)
Viburnum acerifolium (Maple-leaved Viburnum)
Viburnum lantana (Wayfaring-tree Viburnum)
Vitis spp. (Wild Grape)

Herbaceous Plants:

Achillea millefolium (Common yarrow)
Agrostis alba (Redtop)
Ajuga reptans (Bugleweed)
Alcea rosea (Hollyhock)
Ambrosia spp. (Ragweed)
Andropogon virginicus (Broomsedge)
Anemone spp. (Thimbleweed)
Antennaria spp. (Pussy's Toes)
Arisaema triphyllum (Jack-in-the-Pulpit)

Asarum virginicum (Wild Ginger)
Asclepias syriaca (Common milkweed)
Asplenium platyneuron (Ebony Spleenwort)
Aster spp. (Aster)
Athyrium thelypteroides (Silvery Spleenwort)
Bidens spp. (Beggar-ticks)
Brassica spp. (Mustard)
Campanula americana (Tall Bellflower)
Carex spp. (Sedges)
Cassia marilandica (Wild Senna)
Cassia nictitans (Wild Sensitive Plant)
Cerastium vulgatum (Mouse-ear Chickweed)
Chrysanthemum leucanthemum (Ox-eye Daisy)
Chrysanthemum spp. (Shasta daisy)
Cichorium intybus (Chicory)
Cirsium spp. (Thistle)
Claytonia spp. (Spring Beauty)
Collinsonia canadensis (Rich-weed)
Commelina communis (Virginia Day flower)
Convolvulus arvensis (Field Bindweed)
Crocus spp.
Cuphea petiola (Clammy Cuphea)
Cuscuta spp. (Dodder)
Daucus carota (Wild carrot)
Dentaria spp. (Toothwort)
Desmodium spp. (Tick Trefoil)
Dianthus armeria (Deptford Pink)
Doronicum (Leopard_s Bane)
Dryopteris cristata (Crested Wood Fern)
Elephantopus spp. (Elephant's Foot)
Equisetum arvense (Common horsetail)
Erigeron annuus (Daisy Fleabane)
Erigeron philadelphicus (Philadelphia Fleabane)
Eupatorium coelestinum (Mist-flower)
Eupatorium purpureum (Joe-Pye Weed)
Galium spp. (Bedstraw)

Galium spp. (Bedstraw)
Geranium sanguineum (Cranesbill)
Geranium spp. (Wild Geranium)
Geum spp. (Avens)
Hedeoma pulegioides (Pennyroyal)
Helenium spp. (Sneezeweed)
Helianthus tuberosus (Jerusalem Artichoke)
Helianthus spp. (Sunflower)
Hemerocallis spp. (Daylily)
Heuchera spp. (Alumroot)
Heuchera x brizoides (_Pluie de Feu_) (Coral Bells)
Hieracium spp. (Hawkweed)
Hosta fortunei _Glauca_ (Hosta sp.)
Hosta lancifolia (Hosta sp.)
Hosta marginata (Hosta sp.)
Hosta undulata _Variegata_ (Hosta sp.)
Hydrophyllum virginianum (Virginia Waterleaf)
Hypericum spp. (St. John's-wort)
Impatiens spp. (Jewelweed)
Iris spp.
Lactuca spp. (Wild Lettuce)
Leonurus cardiaca (Motherwort)
Lespedeza spp. (Bush Clover)
Liriope spp.
Lobelia inflata (Indian Tobacco)
Lobelia siphilitica (Great Lobelia)
Lobelia spicata (Spiked Lobelia)
Lycopodium complanatum var. *flabelliforme* (Ground pine)
Malva rotundifolia (Common Mallow)
Malus spp. (Crabapple) *
Melilotus spp. (Sweet Clover)
Menispermum canadense (Moonseed)
Mentha piperita (Peppermint)
Monarda didyma (Bee Balm)
Monarda fistulosa (Wild Bergamot)
Monarda punctata (Horsemint)
Muhlenbergia schreberi (Nimblewill)
Muscari sp. (Grape Hyacinth or Bluebells)
Nepeta hederacea (Gill-over-the-ground)
Oenothera fruticosa (Sundrops)
Oenothera spp. (Evening Primrose)
Oxalis spp. (Wood Sorrel)
Pachysandra spp.
Phleum pratense (Timothy)
Phlox paniculata (Summer plox)
Physalis spp. (Ground cherry)
Pilea pumila (Clearweed)
Plantago major (Common Plantain)
Plantago lanceolata (English Plantain)
Podophyllum peltatum (Mayapple)
Polemonium reptans (Jacob_s Ladder)
Polimoniaceae spp. (Phlox)
Polygala sanguinea (Milkwort)
Polygonatum commutatum (Great Solomon_s Seal)
Potentilla canadensis (Common Cinquefoil)
Prenanthes spp. (Rattlesnake-root)
Primula x polyantha (Polyanthus Primrose)
Prunella vulgaris (Heal-all)
Pulmonaria (Lungwort)
Pycnanthemum spp. (Mountain mint)
Ranunculus spp. (Crowfoot)
Rudbeckia hirta (Brown-eyed Susan)
Rumex spp. (Dock)
Sanguinaria canadensis (Bloodroot)
Sanguinaria canadensis _Multiplex_ (Double Flowered Bloodrot)
Scilla siberica (Blue Squill or Siberian Squill)
Sedum acre (Gold Moss)
Sedum spectabile (Sedum sp.)
Sedum ternatum (Stonecrop)
Senecio aureus (Golden Ragwort)
Smilacina racemosa (False Spikenard)
Solidago spp. (Goldenrod)
Spiranthes gracilis (Slender Ladies Tresses)
Stachys byzantina (Lamb_s Ear)
Taraxacum spp. (Dandelion)
Tradescantia virginiana (Spiderwort)
Trifolium hybridum (Alsike Clover)
Trifolium pratense (Red Clover)

Trifolium repens (White Clover)
Trifolium spp. (Hop Clover)
Trillium cernuum (Nodding Trillium)
Trillium grandiflorum (White Wake-Robin)
Trillium spp.
Uvularia grandiflora (Big Merrybells)
Uvularia perfoliata (Bellwort)
Verbascum blattaria (Moth Mullein)
Viola canadensis (Canada Violet)
Viola sororia (Woolly Blue Violet)
Viola spp. (Violet)
Verbascum thapsus (Common Mullein)
Vernonia spp. (Ironweed)
Veronica officinalis (Common Speedwell)
Woodsia obtusa (Obtuse Woodsia)

Fruits:

Rubus occidentalis (Black Raspberry)

Vegetables/Crops:

Allium cepa (Onions)
Beta vulgaris (Beets)
Dioscorea villosa (Wild Yam)
Glycine max (Soybean)
Pastinaca sativa (Parsnips)
Phaseolus spp. (Lima beans)
Phaseolus spp. (Snap beans)
Triticum aestivum (Wheat)
Zea mays (Corn)

Grasses:

Arrhenatherum elatius (Tall Oatgrass)
Bromus spp. (Brome grass)
Dactylis glomerata (Orchardgrass)
Holcus mollis *_Variegatus_* (Velvet grass)
Panicum clandestinum (Deer Tongue Grass)
Poa compressa (Canada Bluegrass)
Poa pratensis (Kentucky Bluegrass)

Ferns:

Athyrium asplenoides (Lowland Lady)
Botrychium dissectum (Dissection Grape Fern)
Botrychium dissectum var. obliquum (Common Grape Fern)
Dennstaedtia punctilobula (Hay-scented)
Dryopteris intermedia (Intermediate Shield Fern)
Dryopteris marginalis (Marginal Shield)
Onoclea sensibilis (Sensitive Fern)
Osmunda cinnamomea (Cinnamon Fern)
Polystichum acrostichoides (Christmas)

Sources:

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Mary Wilson, Horticulture Agent, MSU Extension-Genesee County.

Virginia Cooperative Extension _What Grows Under Black Walnuts_

***Published sources disagree on the sensitivity to the toxin Juglone.**

Would you like additional information?

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