



Black Walnut Toxicity

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Black Walnut (*Juglans nigra*) and Butternut (*Juglans cinerea*) are allelopathic; that is, they both produce a substance called juglone (mainly through their roots) that can inhibit the growth of other plants. Many plants may be injured or killed in a relatively short period of growth (1 or 2 months) within the root zone of these plants. Symptoms such as stunting or deformed growth can occur as well as wilting and death. If you want to grow sensitive plants in the same area it is recommended that you plant in containers. (Plants will not overwinter in containers without winter protection.)

The toxic zone from a mature tree extends on average 50 to 60 feet from the trunk but can reach as far as 80 feet and extends outward each year as the tree roots spread since most of the juglone is secreted by the roots of the tree. A tree can have a root diameter twice the height of the tree and or the spread of its branches. Juglone is poorly soluble in water and for that reason does not move very far in the soil. The greatest concentrations of juglone are generally found in the area directly under the canopy of the tree.

Many plants are capable of growing in close proximity to a walnut tree. However, some of these “juglone resistant” plants may grow even better when planted where there is no juglone present, even though they can tolerate some juglone. The list of plants we have compiled comes primarily from published sources and our observations of native woodlands, gardens, orchards, ornamental plantings, etc. and not from clinical tests. Cultivars of some species may do poorly even though their family appears on the resistant list. The same holds true for sensitive plants.

Slowly decaying roots will continue to release juglone for some years after a tree has been removed so cutting down the tree will not remove the toxins immediately. Allow several years or more for juglone to break down before planting sensitive plants. There is no chemical control to stop the toxic effect of the juglone.

The leaves can be composted because the toxin breaks down when exposed to air, water, and bacteria within 2 to 4 weeks. Do not mulch plants that are sensitive to juglone with fresh sawdust, chips, or mulch from walnut. However, if allowed to compost for a minimum of six months, the bark should provide a safe mulch for sensitive plants. Walnut pollen can cause allergic symptoms in both horses and humans (typically in May). Horses may be affected by black walnut chips or sawdust when used as bedding material.

This plant list is a compilation of suggestions and/or guidelines but by no means is it definitive or complete. We will continue to update it as new information becomes available.

Sensitive To Juglone:

Trees: Shade, Ornamental & Fruit

Alder
Apples
White Birch
Crabapple
Hackberry
Larch
Lindens (Basswood)
Magnolia
Maple-freemanii/silver
Oak
Ornamental Cherries
Pear

Shrubs

Azaleas/Rhododendron
Chokeberry, arbifolia
Cotoneaster
Dogwood, Pagoda

Shrubs (cont.)

Hydrangea, Paniculata
Lilac
Potentilla
Privet
Viburnum, some

Annuals

Nicotiana
Petunias

Evergreens

Pine
Spruce
Yew

Fruits and Vegetables

Asparagus
Beans (some)
Blackberry

Fruits & Veg. (cont.)

Blueberry
Cabbage
Cucumber
Domestic Grapes
Eggplant
Peppers
Potatoes/Tomatoes
Rhubarb

Bulbs

Autumn Crocus *Colchichum*

Resistant To Juglone:

Trees: Shade, Ornamental & Fruit

Beech
Birch, River
Blackgum
Black Cherry
Black Locust
Blue Beech
Catalpa
Cherry, Pin, Wild Black
Chestnut
Elm American
Forsythia
Hawthorn
Hickory
Honeylocust
Hornbeam
Maple (Most, not silver)
Ohio Buckeye
Peach
Pin Cherry
Plum
Red Bud
Serviceberry
Sycamore

Vines

Bittersweet
Boston Ivy
Clematis
Dutchman's Pipe
Englemann Ivy
Honeysuckle
Morning Glory
Virginia Creeper
Wisteria

Shrubs

Barberry
Currant
Dogwood, Silky
Elderberry

Forsythia
Hazelnut, American
Hibiscus
Honeysuckle
Hydrangea, arborescens
Mockorange
Ninebark
Rhododendron
Serviceberry
St. John's Wort
Sumac, Fragrant & Smooth
Viburnums, Maple leaf
Wild Roses
Witchhazel

Annuals

Begonia, tuberous
Cleome
Coleus
Dianthus
Four O'Clocks
Impatiens
Lobelia
Morning Glories
Pansies
Peppermint
Pot-Marigold
Violas/Violets
Wax Begonias
Zinnia

Bulbs

Crocus
Daffodil
Grape Hyacinth
Hyacinth
Scilla
Tulip

Small Fruits & Vegetables

Beets
Black Raspberries
Carrot
Corn

Current
Lima Beans
Melon
Onion
Parsnip
Snap Beans
Squash

Evergreens

Arborvitae
Eastern Red Cedar
Hemlock
Juniper

Perennials

Aster
Astilbe *Astilbe*
Barrenwort *Epimedium*
Bee Balm *Monarda*
Bellflower *Campanula*
Black-eyed Susan
Rudbeckia
Bleeding Heart *Dicentra*
Bugleweed *Ajuga*
Bugloss *Brunnera*
Buttercup *Ranunculus*
Chrysanthemums (some)
Cinnamon Fern
Osmunda
Coneflower Purple
Coral Bells *Heuchera*
Cranesbill *Geranium*
Daisy *Dendranthema*
Daylily *Hemerocallis*
Epimedium
Evening Primrose
Oenothera
Ferns (Most)
Foamflower *Tiarella*
Garden Phlox *P.*
paniculata
Ginger *Asarum*
Goatsbeard *Aruncus*
Golden Ray *Ligularia*
Goldenrod *Solidago*

Grasses (Most)
Hollyhock *Alcea*
Hosta
Iris *Iris*
Jack-in-the-pulpit
Arisaema
Jacob's Ladder
Polmonium
Japanese Spurge
Pachysandra
Joe-pye Weed
Eupatorium
Lady's Mantle
Alchemilla
Lamb's Ear *Stachys*
Leopard's Bane
Doronicum
Lobelia
Lungwort *Pulmonaria*
Mint *Peppermint*
Obedient Plant
Physostegia
Peony (Some) *Paonia*
Pig Squeak *Bergenia*
Plantain Lily *Hosta*
Primrose *Primula*
Rose of Sharon *Hibiscus*
Shasta Daisy
Leucanthemum
Solomon's Seal
Polygonatum
Speedwell *Veronica*
Spiderwort *Tradescantia*
Stonecrop *Sedum*
Sunflower *Helianthus*
Sweet Woodruff *Galium*
Toad Lily *Tricyrtis*
Trillium *Trillium*
Violet *Viola*
Virginia Bluebell
Mertensia
Windflower *Anemone*
Yarrow *Achillea*