



AWE *wal*NUTS!

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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. 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. The toxic area extends outward each year as the tree roots spread since most of the juglone is secreted by the roots of the walnut or butternut tree. A tree can have a root diameter twice the height of the tree and or the spread of its branches. Keep sensitive plants far away.

Many plants are reported to be resistant to the toxic juglone and 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. Research on this subject is limited so our information is based on observations of native woodlands, gardens, orchards, ornamental plantings, etc. and not from clinical tests. **This makes our plant lists a wonderful compilation of suggestions and/or guidelines but by no means are they definitive nor complete.** Cultivars of some species may do poorly even though their family appears on the resistant list. The same holds true for sensitive plants.

For sensitive 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 in Minnesota.) 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. However, as mentioned above the root zone of the tree can reach well beyond the canopy. 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 breakdown before planting sensitive plants where a walnut has been removed. There is no chemical control to stop the toxic effect of the juglone.

The juglone toxin occurs throughout the walnut tree with the highest concentrations being found in the root zone. The leaves can be composted because the toxin breaks down when exposed to air, water and bacteria within 2 to 4 weeks. It is not recommended that you mulch plants that are sensitive to juglone with fresh sawdust, chips, prunings 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. At the end of the day it is probably best to avoid using leaves, twigs, chips, and sawdust from walnut trees for mulch, compost or bedding material.

Resistant To Juglone:

Trees: Shade, Ornamental & Fruit

Ash, White & Black
Beech
Birch, River
Blackgum
Black Locust
Blue Beech
Catalpa
Cherry, Pin, Wild Black
Chestnut
Elm American & Slippery
Forsythia
Fringe Tree
Hawthorn
Hickory
Honeylocust
Maple (Most but not all)
Mulberry
Oak, White & Red
Ohio Buckeye
Peach
Pin Cherry
Plum
Red Bud
Serviceberry
Sycamore
Winged Euonymus

Vines

Bittersweet
Boston Ivy
Clematis
Dutchman's Pipe
Englemann Ivy
Honeysuckle
Morning Glory
Poison Ivy
Wild Grape

Shrubs

Alder, Speckled
Beautybush
Currant
Dogwood, Pagoda & Silky
Euonymus
Forsythia
Fringe Tree
Hazelnut, American
Honeysuckle
Ninebark
Rhododendron
Sumac, Fragrant & Smooth
Viburnums
Wild Roses
Witchhazel

Annuals

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

Bulbs

Crocus
Daffodil
Grape Hyacinth
Hyacinth
Scilla
Snowdrop
Tulip

Small Fruits & Vegetables

Beets
Black Raspberries
Carrot
Corn
Lima Beans
Melon
Onion
Parsnip
Snap Beans
Squash
Wild Grapes

Evergreens

Arborvitae
Eastern Red Cedar
Hemlock
Juniper, Chinese & Common

Perennials

Aster
Astilbe *Astilbe*
Barrenwort *Epimedium*
Bee Balm *Monarda*
Bellflower *Campanula*
Black-eyed Susan *Rudbeckia*
Bleeding Heart *Dicentra*
Bugleweed *Ajuga*
Bugloss *Brunnera*
Buttercup *Ranunculus*
Cinnamon Fern *Osmunda*
Coral Bells *Heuchera*
Cranesbill *Geranium*
Daisy *Dendranthema*
Daylily *Hemerocallis*
Evening Primrose *Oenothera*
Ferns (Most)
Foamflower *Tiarella*

Resistant Perennials Cont.

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-pyeweed *Eupatorium*
Lady's Mantle *Alchemilla*
Lamb's Ear *Stachys*
Leopard's Bane *Doronicum*
Lungwort *Pulmonaria*
May Apple *Podophyllum*
Mint *Pepermint*
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*
Waterleaf *Hydrophyllum*

Sensitive To Juglone:

Trees: Shade, Ornamental & Fruit

Alder
Apples
Birch
Crabapple
Hackberry
Japanese Larch
Lindens (Basswood)
Ornamental Cherries
Pear
Silver Maple

Annuals

Nicotiana
Petunia

Field Crops

Alfalfa
Crimson Clover
Tobacco

Perennials

Chrysanthemum (Some)
Coumbine (Some) *Aquilegia*
False Indigo *Baptisia*
Grass (Few)
Lily *Lilium*
Peony (Some) *Paonia*

Bulbs

Autumn Crocus *Colchichum*

Small Fruits & Vegetables

Asparagus
Beans (Some)
Blackberry
Blueberry
Cabbage
Cucumber
Domestic Grapes
Eggplant
Pepper
Potatoes
Rhubarb
Tomatoes

Shrubs

Amur Honeysuckle
Azaleas
Cotoneaster
Hydrangea
Lilac
Potentilla
Privet
Red Chokeberry
Rhododendrons
Viburnum (Few)

Evergreens

Norway Spruce
Pines
Yew