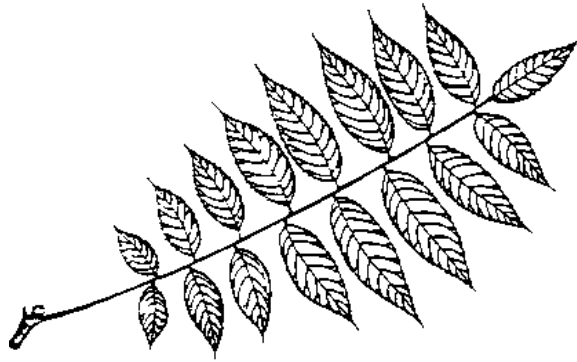


Toxic Affects of Black Walnut Trees



Black walnut (*Juglans nigra*), and to a lesser extent butternut (*Juglans cinerea*), a closely-related species, produce a toxic substance that can be harmful to nearby plants. The trees produce the toxin juglone, which inhibits respiration in susceptible plants, causing growth to be retarded, stunted, or deformed. This can even kill some plant species.

The extent of the damage depends on how resistant a particular species is to juglone, and the amount of physical contact the plant has with the black walnut roots. Root contact, or close physical proximity to the roots (within ¼"-½"), seems to be necessary before the actual harm is done.

Minor amounts of juglone are supposedly generated in several other ways: by leaf decay on the soil surface, from nut husks, and even from rain water dripping through the leaf canopy. The quantity generated by these other means, however, is small. In addition, juglone is not very water soluble, so it will not move far in the soil.

Symptoms

Symptoms of black walnut toxicity are variable, and can sometimes mimic symptoms of diseases or physiological

disorders. Walnut toxicity will often show up as a wilting or drooping of leaves, first partial, then total. This is especially true for fast-growing annual plants, such as potatoes or tomatoes.

Tomatoes, for example, show symptoms of yellowing and discoloration of the leaves, as well as twisting and puckering. Discoloration and darkening of internal stem tissue can also occur.

For woody plants (shrubs, trees, etc.), symptoms on newer tender growth can be similar to that of annual plants. Generally, symptoms on older growth are more subtle, and will appear as an overall decline of the plant, with eventual death possible.

Plants that are in the Nightshade family (*Solanaceae*) seem to be especially susceptible to the toxin juglone. Commonly planted vegetables in this family include eggplant, green pepper, potato and tomato. Most research on juglone toxicity and solanaceous plants has focused on tomatoes, partly because they are so widely planted. It is a good idea to be cautious with planting other members of the Nightshade family near black walnuts, also.

The list of tolerant and resistant plants is in no way complete. Research on this subject is limited, and often consists merely of observations of which plants do and do not grow near black walnuts in natural settings. Additionally, some reports offer conflicting information.

Control

There is no chemical control available to stop the potentially toxic effect of black walnut roots. The only practical control is physical separation. Feeder roots from black walnuts extend far beyond the outer edges of the leaf canopy of the tree, so it is best to keep susceptible plants a good distance from it. There is no specific guideline for number of feet away from a tree, but obviously the farther away the better.

Cutting down and removing the tree is of limited help, unless all roots are removed from the soil. This gets to be a tedious and complex job (feeder roots are very tiny), so tree removal is not recommended. Any roots remaining in the soil can continue to give off the toxin juglone, until the roots deteriorate and decay (sometimes several years).

As a last resort, susceptible plants can be grown in above-ground containers. In pots, of course, tomatoes or similar annual plants will not be in root contact with the tree.

As indicated, black walnut leaves probably give off little juglone. But to be on the safe side, it is best to rake up the leaves, and to avoid using the bark or chips as a mulch, except around plants that tolerate juglone. Keep leaves

and other black walnut debris out of the compost pile, too

OLERANT TREES & SHRUBS

Acer negundo, Boxelder
Acer nigrum, Black Maple
Acer saccharum, Sugar Maple
Betula nigra 'Heritage', River Birch
Catalpa, Common
Celtis occidentalis, Hackberry
Cercis Canadensis, Eastern Redbud
Clematis terniflora, Sweet Autumn
Clematis, Red Cardinal
Forsythia suspense, Weeping
Forsythia

Gleditsia, Thornless Honeylocust
Bibiscus syriacus, Rose of Sharon
Ilex opaca, American Holly
Juniperus chinensis, Pfitzer Juniper
Juniperus virginiana, Eastern
Redcedar
Kerria japonica, Kerria
Kerria 'Pleniflora', double
flowering Kerria
Koelreuteria paniculata, Golden
Raintree
Lindera benzoin, spicebush
Lonicera tatraica, Tatarian
honeysuckle
Morus alba, White mulberry
Parthenocissus, Virginia Creeper
Picea abies, Norway spruce
Philadelphus, Mock Orange
Pinus jeffreyi, Jeffrey pine
Populus sp., Poplar
Prunus cistena, Purple Sandcherry
Quercus alba, White Oak
Quercus rubra, Northern Red Oak
Rosa multiflora, Multiflora Rose
Syringa sp., Lilacs
Thuja occidentalis, Aborvitae
Tilia platyphyllos, Bigleaf linden
Tsuga Canadensis, Candian
Hemlock
Viburnum lantana, Wayfaring tree

Viburnum carlesii, Korean spice
Viburnum

TOLERANT BULBS

Glory-of-the-snow
Crocus
Spanish bluebell
Winter aconite
Snowdrop
Hyacinth 'City of Harlem'
Grape Hyacinth
Narcissus 'Cheerfulness' 'Yellow
Cheerfulness', 'Tete a Tete',
'Sundial' & February Gold
Siberian Squill
Tulips

TOLERANT ANNUALS

Non-stop Begonias
Calendula, Pot Marigolds
Impatiens
Morning Glory
Horned Violet
Violas
Pansies
Zinnias

TOLERANT PERENNIALS

Ajuga, Bugleweed
Alcea rosea, Hollyhock
Anemone, Wood Anemone
Arisaema, Jack -in-the-Pulpit
As arum, European Wild Ginger
Astilbes
Athyrium, Lady Fern
Campanula, Clips series
Campanula latifolia, Bellflower
Chelone, Turtlehead
Chionodoxa, Glory-of-the-Snow
Chrysanthemum, Hardy Mums
Claytonia, Spring Beauty
Convollaria, Lily-of-the-Valley
Dicentra cuc., Dutchmans
Breeches
Dicentra spectabilis, Bleeding
Heart
Doronicum, Leopard's Bane
Dryopteris, Crested Wood Fern
Echianaceae, Coneflower
Galium, Sweet Woodruff

Geranium, Cranesbill Geranium
Gramineae Grasses
Helenium, Sneezewort

TOLERANT PERENNIALS

Hemerocallis, Daylilies
Hesperis matronalis
Heuchera, Coral Bells
Hosta varieties
Iris, Siberian
Monarda, Bee Balm
Monarda fistulosa, Wild
Bergamont
Oenothera, Sundrops
Onoclea, Sensitive Fern
Osmunda, Cinnamon Fern
Paeonia, Garden Peony
Phlox Panniculata, Tall Phlox
Phlox subulata
Polemonium reptans, Jacob
Ladder
Polygonatum, Solomon's Seal
Primula, Primrose
Pulmonaria, Lungwort
Sanguinaria, Bloodroot
Sedum acre, Gold moss
Sedum spectabile Autumn Joy
Sedum
Stachys, Lamb's Ear
Tradescantia, Spider wort
Trillium, Nodding
Vinca minor, Periwinkle
Viola Canadensis, Canada Violet
Viola sororia, Woolly blue violet

TOLERANT VEGETABLES

Allium
Beans
Carrots
Corn
Melons
Squash

TOLERANT FRUITS

Prunus species-Peach, Nectarine,
Cherry, Plum
Pyrus, Pear
Rubus, Black Raspberry

