

Suggested Plant Species for Sites with a History of *Phytophthora* Root or Crown Rot

Phytophthora is one genus within the group of “fungus-like” organisms known as oomycetes. *Phytophthora* species are capable of infecting a wide range of trees, shrubs, and bedding plants. Most plant-pathogenic species of *Phytophthora* cause root and crown rots and are able to persist for numerous years in soil.

Chemical management of these diseases usually is impractical or not economical in landscapes. The following cultural management practices are recommended when *Phytophthora* root or crown rot has been diagnosed in a landscape.

- Remove severely affected plants.
- Prepare the site to ensure good drainage and organic matter content by adding pine bark to soil, raising beds, or planting on berms.
- Inspect all planting material and set only healthy plants into the landscape.
- Avoid overwatering and over-fertilization.
- Select plant species that are tolerant to *Phytophthora* when replacing plants lost to this pathogen.

Due to the large number of *Phytophthora* species and their wide host ranges, it is very difficult to make general recommendations about replacement plants for the landscape. The lists presented here were compiled based on published reports, Plant Disease and Insect Clinic records from North Carolina and neighboring states, and the expert opinion of many plant pathologists.

Disclaimer: Many resistant or tolerant plants may be susceptible to attack by *Phytophthora* in wet, poorly drained sites.

Good general horticultural practices should be used, as well as the cultural management options listed above.

Also note that many of these plants are susceptible to other pests or pathogens that may be present in the soil and attack roots, such as *Pythium* spp., *Rhizoctonia* spp., *Sclerotium rolfsii*, *Thielaviopsis basicola*, or root-feeding nematodes.

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Phytophthora root rot symptoms in the landscape often include loss of older foliage, general decline in vigor and new growth, branch dieback, and wilting.

Table 1. Annual Ornamental Plants Tolerant or Resistant to *Phytophthora* species

Family	Scientific Name	Common Name
Asteraceae	<i>Ageratum</i> sp.	ageratum
	<i>Tagetes</i> spp.	marigold
	<i>Tithonia diversifolia</i>	tree marigold
	<i>Tithonia rotundifolia</i>	Mexican sunflower
Balsaminaceae	<i>Impatiens</i> spp.	impatiens
Brassicaceae	<i>Alyssum</i> sp.	alyssum
	<i>Brassica</i> sp.	ornamental cabbage, kale
Convolvulaceae	<i>Ipomoea batatas</i>	sweetpotato vine
	<i>Ipomoea</i> sp.	morning glory
Geraniaceae	<i>Pelargonium x hortorum</i>	geranium
Portulacaceae	<i>Portulaca</i>	moss-rose
Scrophulariaceae	<i>Angelonia angustifolia</i>	angelonia
Verbenaceae	<i>Lantana</i> sp.	lantana
	<i>Verbena bonariensis</i>	purpletop vervain

Table 2. Woody Shrubs and Trees Tolerant or Resistant to *Phytophthora* species

Family	Scientific Name	Common Name
Aquifoliaceae	<i>Ilex chinensis</i>	Chinese hollies
	<i>Ilex verticillata</i>	winterberry
	<i>Ilex vomitoria</i>	yaupon
	<i>Ilex x burfordii</i>	Burford holly*
Betulaceae	<i>Betula nigra</i>	river birch
Calycanthaceae	<i>Calycanthus</i> spp.	sweetshrub, spicebush
	<i>Chimonanthus praecox</i>	wintersweet
Caprifoliaceae	<i>Abelia x grandiflora</i>	abelia
Cupressaceae	<i>Metasequoia glyptostroboides</i>	dawn redwood
	<i>Taxodium distichum</i>	baldcypress
Fabaceae	<i>Gleditsia tricanthos</i>	honeylocust
Ginkgoaceae	<i>Ginkgo biloba</i>	ginkgo
Grossulariaceae	<i>Ribes</i> spp.	currants, gooseberry
Hamamelidaceae	<i>Liquidambar styraciflua</i>	sweetgum
Magnoliaceae	<i>Magnolia</i> spp.	magnolias
Nyssaceae	<i>Nyssa sylvatica</i>	black gum
Rosaceae	<i>Rosa</i> spp.	rose**
Salicaceae	<i>Salix</i> spp.	willows

*Also other hollies with *I. chinensis* parentage. Note that many *Ilex* species are susceptible to species of *Phytophthora*—for example blue hollies, Japanese holly, possumhaw (*I. decidua*), and inkberry.

**Rose is occasionally infected by *Phytophthora* spp. in the nursery, but we do not consider it a problem in landscape situations.

Table 3. Herbaceous Perennial Ornamental Plants Tolerant or Resistant to *Phytophthora* species

Family	Scientific Name	Common Name
Amaryllidaceae	<i>Amaryllis/Hippeastrum</i> spp.	amaryllis
	<i>Narcissus</i> spp.	narcissus/daffodil
	<i>Lycoris radiata</i>	spider lily
	<i>Zephyranthes</i> spp.	rain lily
Apocynaceae	<i>Amsonia</i> spp.	bluestar
Asteraceae	<i>Aster</i> spp.	aster
	<i>Dahlia</i> spp.	dahlia
	<i>Echinacea purpurea</i>	purple coneflower
	<i>Gazania</i> sp.	gazania
	<i>Gaillardia</i> sp.	blanketflower
	<i>Rudbeckia hirta</i>	black-eyed Susan
Brassicaceae	<i>Iberis sempervirens</i>	candytuft
Buxaceae	<i>Pachysandra</i> spp.	pachysandra
Cannaceae	<i>Canna</i> spp.	canna lily
Caryophyllaceae	<i>Lychnis</i> spp.	lychnis
Cyperaceae	<i>Carex</i> spp.	ornamental sedges
Geraniaceae	<i>Geranium sanguineum</i>	cranesbill
Lamiaceae	<i>Ajuga reptans</i>	common bugleweed
	<i>Mentha</i> spp.	mints
	<i>Monarda</i> spp.	bee balm
Poaceae	several	ornamental grasses
Polemoniaceae	<i>Phlox subulata</i>	moss phlox (creeping)
Ranunculaceae	<i>Anemone</i> spp.	anemone
Trilliaceae	<i>Trillium</i> spp.	trillium
several	several	ferns

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