

ORNAMENTALS

INSECT CONTROL FOR HOME FLOWERS, SHRUBS, AND GROUND COVERS

Will Hudson, Extension Entomologist

NOTE: There is increasing concern about the health of pollinators, including honeybees and other bees, butterflies, and moths. Flowering plants in urban and suburban landscapes are an important source of nectar and pollen for these beneficial insects. Insecticide use in the home environment can cause significant harm to pollinators incidental to efforts at controlling pests. Be careful when using any insecticides around blooming plants, including trees and weeds. Broad-spectrum contact insecticides (pyrethroids, Sevin, acephate, etc.) applied as a liquid spray will kill most insects on contact. While

less deadly once dry, unless treated leaves are eaten by the insects (foliage feeding caterpillars, for instance), there are still residues that can be picked up by foraging bees and taken back to the colony. Never spray blooming plants while bees are actively foraging. Late afternoon or evening application reduces the risks. Directly spraying the blossoms should also be avoided at all times. Avoid applying neonicotinyl insecticides (imidacloprid, dinotefuran) to blooming plants, as these systemic materials can be transferred to the nectar and pollen under some circumstances.

INSECTS	INSECTICIDE	AMT/GAL OF WATER	REMARKS AND PRECAUTIONS
Aphids	<i>acephate</i> 75S Orthrene, etc.	2 tsp	See note below.
	<i>dinotefuran</i> Safari		Per label directions. Take note of pollinator protection restrictions.
	horticultural oils	1–2 oz	Per label directions.
	<i>imidacloprid</i> 1.47% BioAdvanced, others		Read label carefully. Take note of pollinator protection restrictions.
	insecticidal soap		Per label directions
	<i>pyrethrins</i>		
	<i>pyrethrum</i>		
Azalea leaf miner	<i>acephate</i> Orthene TTO	1 tsp	Per label directions.
	<i>dinotefuran</i>		Per label directions. Take note of pollinator protection restrictions.
	<i>imidacloprid</i> 1.47% BioAdvanced, others		Per label directions. Take note of pollinator protection restrictions.
Bagworm	<i>Bacillus thuringiensis</i> Biotrol WP, Thuricide, Sok-Bt	2 tsp	Per label directions.
	<i>dinotefuran</i> Safari by Green Light		In winter, hand-pick and burn if only a few bagworms are present.
	<i>malathion</i> 57EC		
	various pyrethroids		See note below.
Borers (various kinds)	<i>dinotefuran</i> Safari by Green Light		Per label directions. Take note of pollinator protection restrictions.
	<i>imidacloprid</i> BioAdvanced, others		<i>Imidacloprid</i> and <i>dinotefuran</i> are effective against flat-headed borers and some clear-winged moths.
	<i>permethrin</i>	Per Label	Apply to trunk and lower limbs in spring as per label directions.

NOTE: A number of pyrethroid materials are available in a variety of home formulations for use as broad-spectrum contact insecticides. Common names include *bifenthrin*, *cyfluthrin*, *cypermethrin*, *deltamethrin*, *lambda-cyhalothin*, *permethrin*, and *tralomethrin*. Active ingredients are listed on the label. Most of the materials listed in the Commercial Landscape Insect Control section of this handbook are not Restricted Use Pesticides and are available for home use. They are not marketed for homes in small quantities at retail garden centers, but they could provide options for some homes. Consult your county Extension agent for advice on alternatives.

INSECT CONTROL FOR HOME FLOWERS, SHRUBS, AND GROUND COVERS

INSECTS	INSECTICIDE	AMT/GAL OF WATER	REMARKS AND PRECAUTIONS
Boxwood leaf miner	<i>acephate</i> 75S Orthene, etc.	2 tsp	
	<i>dinotefuran</i> Safari by Green Light		Per label directions.
	<i>imidacloprid</i> 1.47% BioAdvanced, others		Per label directions. Take note of pollinator protection restrictions.
Caterpillars (Misc. leaf feeders)	<i>Bacillus thuringiensis</i> Biotrol WP, Thuricide, Sok-Bt		Per label directions.
	various pyrethroids		See note below.
	<i>spinosad</i> Conserve, other brands	1 tsp	Some organic certified products are available.
Holly leaf miner	<i>imidacloprid</i> Many brands		Spray in late spring to kill larvae in mines. Per label directions.
Japanese beetle (adults)	<i>dinotefuran</i>		Per label directions. Take note of pollinator protection restrictions.
	<i>imidacloprid</i> Many brands		Per label directions. Take note of pollinator protection restrictions.
Lace bugs	<i>acephate</i> Orthene, etc.	1 tsp	Apply in early spring when nymphs of first generation are present.
	<i>dinotefuran</i>		Per label directions. Take note of pollinator protection restrictions.
	<i>imidacloprid</i> Many brands		Per label directions.
Scale Insects	<i>dinotefuran</i>	1–2 oz	Per label directions.
	horticultural oils	2 tsp	Per label directions.
	<i>imidacloprid</i> Many brands		Per label directions.
	insecticidal soap		
	<i>malathion</i> 57EC		Apply in spring to control crawlers. Make applications at 2-week intervals.
Spider mites	<i>bifenthrin</i>		
	horticultural oils		
	<i>imidacloprid</i> Many brands	1–2 oz	Per label directions.
	insecticidal soap		
Slugs and snails	<i>iron phosphate</i> Slug-Go		Follow label directions.
	<i>mesurol</i> 2B		
	<i>metaldehyde</i>		Follow label directions.

NOTE: A number of pyrethroid materials are available in a variety of home formulations for use as broad-spectrum contact insecticides. Common names include *bifenthrin*, *cyfluthrin*, *cypermethrin*, *deltamethrin*, *lambda-cyhalothin*, *permethrin*, and *tralomethrin*. Active ingredients are listed on the label.

Most of the materials listed in the Commercial Landscape Insect Control section of this handbook are not Restricted Use Pesticides and are available for home use. They are not marketed for homes in small quantities at retail garden centers, but they could provide options for some homes. Consult your county Extension agent for advice on alternatives.

INSECTS	INSECTICIDE	AMT/GAL OF WATER	REMARKS AND PRECAUTIONS
Thrips	<i>malathion</i> 57EC		
	<i>spinosad</i> Conserve, other brands	1 tsp	Some organic certified products are available.
	various pyrethroids		
Whitefly	<i>bifenthrin</i>		
	<i>dinotefuran</i>		Per label directions.
	<i>imidacloprid</i> Many brands		Per label directions.
	insecticidal soap		
	<i>pyrethrins</i>		Per label directions.
	<i>pyrethrums</i>		Per label directions.

NOTE: A number of pyrethroid materials are available in a variety of home formulations for use as broad-spectrum contact insecticides. Common names include *bifenthrin*, *cyfluthrin*, *cypermethrin*, *deltamethrin*, *lambda-cyhalothin*, *permethrin*, and *tralomethrin*. Active ingredients are listed on the label. Most of the materials listed in the Commercial Landscape Insect Control section of this handbook are not Restricted Use Pesticides and are available for home use. They are not marketed for homes in small quantities at retail garden centers, but they could provide options for some homes. Consult your county Extension agent for advice on alternatives.

HOME INDOOR PLANT INSECT CONTROL

Will Hudson, Extension Entomologist

NOTE: There is increasing concern about the health of pollinators, including honeybees and other bees, butterflies, and moths. Flowering plants in urban and suburban landscapes are an important source of nectar and pollen for these beneficial insects. Insecticide use in the home environment can cause significant harm to pollinators incidental to efforts at controlling pests. Be careful when using any insecticides around blooming plants, including trees and weeds. Broad-spectrum contact insecticides (pyrethroids, Sevin, acephate, etc.) applied as a liquid spray will kill most insects on contact. While

less deadly once dry, unless they are eaten by the insects (foliage feeding caterpillars, for instance), there are still residues that can be picked up by foraging bees and taken back to the colony. Never spray blooming plants while bees are actively foraging. Late afternoon or evening application reduces the risks. Directly spraying the blossoms should also be avoided at all times. Avoid applying neonicotinyl insecticides (imidacloprid, dinotefuran) to blooming plants, as these systemic materials can be transferred to the nectar and pollen under some circumstances.

INSECTICIDE	RATE	COMMENT
<i>bifenthrin</i> Ortho Houseplant and Garden Insect Killer	As Directed	mealybugs, mites, whitefly, aphids, most chewing pests.
<i>cyfluthrin</i> BioAdvanced Home Pest Control	As Directed	gnats, centipedes, earwigs, scorpions. Follow label directions.
horticultural oil Plant Spray Oil (aerosol) Sunspray Ultrafine, Saf-T-Side	1–2%	scale, whitefly and mites. Coverage is important, spray must contact pest to be effective.
<i>imidacloprid</i> + fertilizer BioAdvanced Garden 2-in-1 Plant Spikes	As Directed	aphids, mealybugs, whitefly.
insecticidal soap M-Pede	1–2%	aphids, mealybugs, scale, thrips, mites, whitefly. Coverage is important, spray must contact pest to be effective.
<i>pyrethrum</i> Pyrethrum (aerosol)	As Directed	aphids, mealybugs, thrips, whitefly.
<i>resmethrin</i> Resmethrin (aerosol)	As Directed	aphids and whitefly.
<i>tralomethrin</i>	As Directed	mites.

HERBACEOUS ORNAMENTALS: HOME OUTDOOR INSECT CONTROL

Will Hudson, Extension Entomologist

NOTE: There is increasing concern about the health of pollinators, including honeybees and other bees, butterflies, and moths. Flowering plants in urban and suburban landscapes are an important source of nectar and pollen for these beneficial insects. Insecticide use in the home environment can cause significant harm to pollinators incidental to efforts at controlling pests. Be careful when using any insecticides around blooming plants, including trees and weeds. Broad-spectrum contact insecticides (pyrethroids, Sevin, acephate, etc.) applied as a liquid spray will kill most insects on contact. While

less deadly once dry, unless they are eaten by the insects (foliage feeding caterpillars, for instance), there are still residues that can be picked up by foraging bees and taken back to the colony. Never spray blooming plants while bees are actively foraging. Late afternoon or evening application reduces the risks. Directly spraying the blossoms should also be avoided at all times. Avoid applying neonicotinyl insecticides (imidacloprid, dinotefuran) to blooming plants, as these systemic materials can be transferred to the nectar and pollen under some circumstances.

PEST	INSECTICIDE	AMOUNT FORMULATION PER GALLON SPRAY	REMARKS AND PRECAUTIONS
Aphids	<i>acephate</i>		Follow label directions.
	horticultural oils	1–2%	Follow label directions.
	<i>imidacloprid</i>		Follow label directions.
	insecticidal soap	1–2%	Thorough coverage necessary. Spray must contact pest to be effective. Repeat spray 3 times at 5–7 day intervals.
	various pyrethroids	Ready-to-use and concentrate	Follow label directions. See note below.
	<i>pyrethrum</i>		Follow label directions.
Beetles (foliage feeding such as Japanese beetle, Elm leaf beetle)	various pyrethroids	Ready-to-use and concentrate	Follow label directions. See note below.
	<i>imidacloprid</i>		Many brands and formulations available. Follow label.
Caterpillars such as Armyworms, Cutworms, Loopers	<i>acephate</i>		Follow label directions.
	<i>Bacillus thuringiensis</i> Dipel, Thuricide		Follow manufacturer's suggestions.
	pyrethroids	Ready to use and concentrate	Follow label directions. See note below.
	<i>spinosad</i> Conserve, other brands	1 tsp	Some organic certified products are available
Mealybugs	<i>acephate</i>		Follow label directions.
	horticultural oils	1–2%	Coverage important, spray must contact pest.
	<i>imidacloprid</i>		Follow label directions.
	insecticidal soap	1–2%	Thorough coverage necessary. Spray must contact pest to be effective. Repeat spray 3 times at 5–7 day intervals.
	pyrethroids	Ready to use and concentrate	Follow label directions.
Plant bugs Leafhopper	<i>acephate</i>		Follow label directions.
	insecticidal soap	1–2%	Thorough coverage necessary. Spray must contact pest to be effective. Repeat spray 3 times at 5–7 day intervals.
	pyrethroids	Ready to use and concentrate	Follow label directions.

Numerous products containing insecticide are available to homes. Products containing the same insecticide may vary in the concentration of the active ingredient. Always consult the product label for information on rate of application. Pyrethroids are a class of chemicals that are excellent contact insecticides. The active ingredients in this class end in *-thrin* (*permethrin*, *bifenthrin*, *cyfluthrin*, etc.) Many brands are available with these active ingredients.

INSECT CONTROL FOR HOME FLOWERS, SHRUBS, AND GROUND COVERS

PEST	INSECTICIDE	AMOUNT FORMULATION PER GALLON SPRAY	REMARKS AND PRECAUTIONS
Scale Insects	<i>acephate</i>		Follow label directions.
	<i>dinotefuran</i>		Best choice for armored scales. Per label directions. Take note of pollinator protection restrictions.
	horticultural oils	1–2%	Follow label directions.
	<i>imidacloprid</i> Many brands		Follow label directions. Good for soft scales. Take note of pollinator protection restrictions.
	insecticidal soap	1–2%	
	<i>malathion</i>		Follow label directions.
	pyrethroids	Ready-to-use and concentrate	Follow label directions.
Slugs and Snails	<i>iron phosphate</i>		Follow label directions. Crawlers only.
	<i>mesurool</i> 2B	1 lb/100 sq ft	Follow label directions.
	<i>methaldehyde</i>		Attention should be given to moist areas or water leaks. Do not use in home gardens.
Sowbugs and Pillbugs	pyrethroids	Ready-to-use and concentrate	Follow label directions.
Spider mites	<i>bifenthrin</i> 0.012%	Ready to use	Follow label directions.
	horticultural oils	1–2%	
	insecticidal soap	1–2%	Coverage is important, spray must contact pest to be effective.
Thrips	<i>acephate</i>		Follow label directions.
	<i>imidacloprid</i> Many brands		Follow label directions. Take note of pollinator protection restrictions.
	insecticidal soap	1–2%	Thorough coverage necessary, spray must contact pest to be effective. Repeat spray 3 times at 5–7 day intervals.
	<i>spinosad</i> Conserve, other brands	1 tsp	Some organic certified products are available.
	various pyrethroids		See note below.
Whitefly	<i>acephate</i>		Follow label directions.
	<i>dinotefuran</i> Safari		Per label directions. Take note of pollinator protection restrictions.
	horticultural oils		
	<i>imidacloprid</i> Many brands		Follow label directions. Take note of pollinator protection restrictions.
	insecticidal soap	1–2%	
	pyrethroids	Ready to use and concentrate	Follow label directions. See note below.

Numerous products containing insecticide are available to homes. Products containing the same insecticide may vary in the concentration of the active ingredient. Always consult the product label for information on rate of application. Pyrethroids are a class of chemicals that are excellent contact insecticides. The active ingredients in this class end in *-thrin* (*permethrin*, *bifenthrin*, *cyfluthrin*, etc.) Many brands are available with these active ingredients.

WEED CONTROL FOR HOMEOWNERS: ANNUAL FLOWERS AND PERENNIALS

Mark A. Czarnota, Extension Horticulturist—Weed Science

HERBICIDE	FORMULATION	AMOUNT OF FORMULATION/ GAL PER 1000 SQ FT	REENTRY INTERVAL (REI) IN HOURS	REMARKS AND PRECAUTIONS
HERBACEOUS FLOWERS				
PRE-EMERGENCE^{1, 2, 3, 4}				
<i>benefin + oryzalin</i> Amaze 2G	2% granular	4.6–6.9 lb	24 H	Can be applied over-the-top of several established bedding plants (see label). Provides broad-spectrum control of many broad leaf and annual grass weeds.
<i>dimethenamid-P + pendimethalin</i> Freehand 1.75 G	1.75% granular	1.75–3.5 lb	12 H	Controls a wide range of annual grasses and broadleaf weeds in established annual and perennial ornamentals (see plant label). DO NOT apply to newly planted ornamentals until plants have been watered, the soil has firmly settled, and no cracks are present. Some commonly planted herbaceous ornamentals on the Snapshot label include Begonia, Rudbeckia, Impatiens, and others. Apply one-half inch of irrigation water, if rainfall is not received within 3 days of application.
<i>dithiopyr</i> Preen for Southern Gardens	0.27 granular	4.5 lb	12 H	Can be applied around many annual and perennial ornamentals (see plant label). If used in combination with mulch, apply over the surface of the mulch after spreading mulch around ornamentals. Also available on a dry fertilizer carrier.
<i>isoxaben + trifluralin</i> Snapshot 2.5 TG	2.5% granular	2.3–4.6 lb	12 H	Controls a wide range of annual grasses and broadleaf weeds in established annual and perennial ornamentals (see plant label). DO NOT apply to newly planted ornamentals until the plants have been watered, soil has firmly settled, and no cracks are present. Some commonly planted herbaceous ornamentals on the Snapshot label include Geranium, Hosta, Patunia, and others. Apply one-half inch of irrigation water, or uniformly incorporate into the soil to a depth of 1 to 2 inches, if rainfall is not received within 3 days of application.
<i>trifluralin</i> Preen 1.47G	1.47% granular	6.25 lb ¹	After water in is dry	Apply to established flowers and ornamentals to control annual grasses and some broadleaf weeds from seed. Optimum weed control is obtained when rainfall or irrigation occurs within a few hours of application. If used in combination with mulch, apply over the surface of the mulch after spreading mulch around ornamentals. DO NOT apply to seedbeds or to non-rooted plants, or around plants when foliage is wet. Preen is also available on a dry fertilizer carrier.
POST-EMERGENCE				
<i>clethodim</i> Envoy Plus	0.97 lb/gal	0.3–0.7 fl oz	24 H	Apply to actively-growing grasses that are not drought stressed. Make sure to add a crop oil concentrate at 1% V/V to the spray solution. Refer to label for recommended list of ornamentals. Envoy will not control broadleaf weeds or nutsedges.
<i>fluazifop-p</i> Grass-B-Gon and others	See label.	See label.	12 H	Apply to actively growing grasses, which are not drought stressed. Refer to label to determine if the addition of a surfactant is necessary. Refer to label for recommended list of ornamentals. <i>Fluazifop</i> will not control broadleaf weeds or nutsedges.
<i>sethoxydim</i> Segment Segment II	1 lb/gal 1.5 lb/gal	0.8–1.4 fl oz 0.6–0.9 fl oz	12 H	Apply to actively growing grasses, which are not drought stressed. DO NOT add a crop oil concentrate or surfactant to Vantage (the formulation contains an adjuvant). Vantage will not control broadleaf weeds or nutsedges.

- 1 All preemergent herbicides require a rain or irrigation event in order for herbicide activation to occur (approximately 0.5 to 1.0 inch of water). If no rain event occurs and no supplemental watering is provided after a preemergent herbicide application, weed control can be extremely poor or totally fail.
- 2 Most preemergent herbicides will only control germinating weed seed. Generally, they will not control weeds after they have become established (1st or 2nd true leaf), and most preemergent herbicides will not control weeds coming from vegetative structures (i.e. yellow and purple nutsedge).
- 3 As long as the treated area remains undisturbed, most pre-emergent herbicides will provide weed control for 2 to 4 months in most growing mediums.
- 4 Do not apply preemergence herbicides to seeded beds or to non-rooted plants or in greenhouses.

WEED CONTROL FOR HOMEOWNERS: ANNUAL FLOWERS AND PERENNIALS

HERBICIDE	FORMULATION	AMOUNT OF FORMULATION/ GAL PER 1000 SQ FT	REENTRY INTERVAL (REI) IN HOURS	REMARKS AND PRECAUTIONS
AREAS ADJACENT TO ORNAMENTAL FLOWERS (POST-EMERGENCE)				
<i>glufosinate</i> Finale 1L	1 lb/gal	2.2–4.4 fl oz	12 H	Apply <i>glufosinate</i> to control emerged weeds. DO NOT allow spray mist to contact ornamental foliage or severe injury will occur. <i>Glufosinate</i> performs poorly on well-established perennial weeds with extensive underground storage structures (Florida betony, bermudagrass, nutsedge, etc.)
<i>glyphosate</i> various trade names and formulations available	See label.	See label.	4 H	Apply <i>glyphosate</i> to control most emerged weeds. DO NOT allow spray mist to contact ornamental foliage, green bark, base of thin bark plants (i.e. Crapemyrtle), or stumps of cuts sucker or severe injury could occur. Avoid applications to drought-stressed weeds.
<i>halosulfuron</i> Sedgehammer 75DF Manage 75 DF Prosedge	75DF	0.9 grams (spray weeds to runoff)	12 H	Apply as a post-directed application to control yellow and purple nutsedge in established woody ornamentals. Apply with ½ fluid ounce of nonionic surfactant per gallon of water. DO NOT allow the spray to contact foliage of desirable woody ornamentals. Wait 3 months after transplanting before application. On areas scheduled to be planted in woody ornamentals wait 4 weeks between application and transplanting.
<i>sulfosulfuron</i> Certainty 75DF	75% Dry flowable	0.48–0.128 grams/2 gal water	12 H	Apply as a post-directed application to control yellow and purple nutsedge and some broadleaf weeds in some established woody ornamentals, perennial ground covers, and ornamentals grasses. Apply with a nonionic surfactant at recommended rates. DO NOT allow the spray to contact foliage of desirable woody ornamentals. Wait 14 days weeks between application and planting.

WEED CONTROL FOR HOMEOWNERS: WOODY ORNAMENTALS¹

Mark A. Czarnota, Extension Horticulturist—Weed Science

HERBICIDE	AMOUNT OF FORMULATION/ GAL PER 1000 SQ FT	REENTRY INTERVAL (REI) IN HOURS	REMARKS AND PRECAUTIONS
WEED CONTROL AND WOODY PLANT MATERIAL / GROUND COVERS			
PRE-EMERGENCE^{2, 3, 4, 5}			
<i>dimethenamid-P</i> + <i>pendimethalin</i> Freehand 1.75 G	1.75–3.5 lb	12 H	Controls a wide range of annual grasses and broadleaf weeds in established woody ornamentals (see plant label). DO NOT apply to newly planted ornamentals until plants have been watered, the soil has firmly settled, and no cracks are present. Apply one-half inch of irrigation water, if rainfall is not received within 3 days of application
<i>dichlobenil</i> Casoron 4G Casoron CS	2.3–3.4 lb 2.2–4.3 oz	12 H	USE ONLY ON ESTABLISHED WOODY ORNAMENTALS. Apply between Nov. 15 and Feb. 15. Good product for controlling non-seed bearing plants (i.e. Bracken fern (<i>Pteridium aquilinum</i>)), winter annuals, and Florida betony (<i>Stachys floridana</i>). After application, Casoron must be watered in with ½–1 inch of water. DO NOT apply until 4 weeks after transplanting woody ornamentals.
<i>dithiopyr</i> Preen for Southern Gardens 0.27 granular	4.5 lb	12 H	Can be applied around many annual, perennial and woody plants (see plant label). Do not apply more than 12.75 lbs/1000 sq ft. If used in combination with mulch, apply over the surface of the mulch after spreading mulch around ornamentals. Also available on a dry fertilizer carrier.

- 1 There are many other herbicides available to the homeowner that are not restricted use (see Commercial Edition—Commercial Grounds Maintenance Weed Control Section). Most of these herbicides are available in larger packaging and can be harder to attain. Moreover, most of these commercial products can pose greater potential for plant injury if used improperly.
- 2 All preemergent herbicides require a rain or irrigation event in order for herbicide activation to occur (approximately 0.5 to 1.0 inch of water). If no rain event occurs and no supplemental watering is provided after a preemergent herbicide application, weed control can be extremely poor or totally fail.
- 3 Most preemergent herbicides will only control germinating weed seed. Generally, they will not control weeds after they have become established (1st or 2nd true leaf), and most preemergent herbicides will not control weeds coming from vegetative structures (i.e. yellow and purple nutsedge).
- 4 As long as the treated area remains undisturbed, most pre-emergent herbicides will provide weed control for 2 to 4 months in most growing mediums.
- 5 Do not apply preemergence herbicides to seeded beds or to non-rooted plants or in greenhouses.

WEED CONTROL FOR HOMEOWNERS: WOODY ORNAMENTALS

HERBICIDE	AMOUNT OF FORMULATION/ GAL PER 1000 SQ FT	REENTRY INTERVAL (REI) IN HOURS	REMARKS AND PRECAUTIONS
PRE-EMERGENCE^{2,3,4,5} (continued)			
<i>indaziflam</i> Specticle 0.0224 GR	2.3–4.6 lb	12 H	Controls a wide range of annual weeds in select woody ornamentals. Provides one of the longest pre-emergence weed control windows of any pre-emergence herbicide. Do not apply any more than 9.2 lb pr/1000 sq ft in a 12-month period.
<i>isoxaben + trifluralin</i> Snapshot 2.5 TG	2.3–4.6 lb		Controls a wide range of annual weeds in certain woody ornamentals, trees and groundcovers. DO NOT apply to newly planted ornamentals until the soil has firmly settled and no cracks are present. Not recommended for applications to bedding plants. Groundcovers should be established and well-rooted prior to application. Apply ½ inches of irrigation water, or uniformly incorporate into the soil to a depth of 1–2 inches if rainfall is not received within 3 days of application.
<i>trifluralin</i> Treflan 5 G Preen 1.47 G	1.8 lb 6.25 lb	After water in is dry	Apply prior to planting and to established plants. Optimum weed control is obtained when rainfall or irrigation occurs within a few hours of application. DO NOT apply to newly planted groundcovers. DO NOT apply Treflan 5G to ornamentals with wet foliage. DO NOT apply to seeded beds or to non-rooted plants. Use the <i>trifluralin</i> product that is registered for ornamental use. Preen is also available on dry fertilizer carriers.
<i>benefin + oryzalin</i> XL 2 G Amaze 2 G	4.6–6.9 lb 4.5 lb	24 H	Can be applied to a wide array of established ornamentals. A half inch of rainfall or irrigation water within 72 hours is required to activate herbicide.
POST-EMERGENCE¹			
<i>glufosinate</i> Finale 1 lb/gal	2.2–4.4 fl oz	12 H	Apply <i>glufosinate</i> to kill most emerged weeds. DO NOT allow spray mist to contact ornamental foliage or severe injury will occur. Avoid applications to drought stressed weeds. Ready-to-use, premixed formulations of Finale are also available. Finale performs poorly on well-established perennial weeds with extensive underground storage systems (Florida betony, bermudagrass, nutsedge, etc.)
<i>glyphosate</i> various trade names and formulations available	See label.	4 H	Apply <i>glyphosate</i> to kill most emerged weeds. DO NOT allow spray mist to contact ornamental foliage, green bark, base of thin bark plants (i.e. Crapeyrtle), or stumps of cuts sucker or severe injury could occur. Avoid applications to drought stressed weeds. <i>Glyphosate</i> is very water soluble and can be tanked mixed with many preemergent herbicides. Refer to <i>glyphosate</i> label to determine compatibility with preemergent herbicides.
<i>halosulfuron</i> Manage 75DF SedgeHammer 75DF Prosedge	0.9 grams (spray weeds to runoff)	12 H	Apply as a post-directed application to control yellow and purple nutsedge in established woody ornamentals. Apply with ½ fluid ounce of nonionic surfactant per gallon of water. DO NOT allow the spray to contact foliage of desirable woody ornamentals. Wait 3 months after transplanting before application. On areas scheduled to be planted in woody ornamentals wait 4 weeks between application and transplanting.
<i>potassium salts of fatty acids</i> Scythe 4.2L and various other trade names are available	See label.	12 H	Apply Scythe to kill most emerged weeds. DO NOT allow spray mist to contact ornamental foliage or severe injury will occur. Avoid applications to drought stressed weeds. Scythe performs poorly on well-established perennial weeds with extensive underground storage systems (Florida betony, bermudagrass, nutsedge, etc.). Also provides postemergent control of mosses, algae, liverworts, and lichens inside greenhouses, on growing containers and benches.
<i>sulfosulfuron</i> Certainty 75DF 75% Dry Flowable	0.48–0.128 grams / 2 gal water	12 H	Apply as a post-directed application to control yellow and purple nutsedge and some broadleaf weeds in some established woody ornamentals, perennial ground covers, and ornamentals grasses. Apply with a nonionic surfactant at recommended rates. DO NOT allow the spray to contact foliage of desirable woody ornamentals. Wait 14 days between application and planting.

- 1 There are many other herbicides available to the homeowner that are not restricted use (see Commercial Edition—Commercial Grounds Maintenance Weed Control Section). Most of these herbicides are available in larger packaging and can be harder to attain. Moreover, most of these commercial products can pose greater potential for plant injury if used improperly.
- 2 All preemergent herbicides require a rain or irrigation event in order for herbicide activation to occur (approximately 0.5 to 1.0 inch of water). If no rain event occurs and no supplemental watering is provided after a preemergent herbicide application, weed control can be extremely poor or totally fail.
- 3 Most preemergent herbicides will only control germinating weed seed. Generally, they will not control weeds after they have become established (1st or 2nd true leaf), and most preemergent herbicides will not control weeds coming from vegetative structures (i.e. yellow and purple nutsedge).
- 4 As long as the treated area remains undisturbed, most pre-emergent herbicides will provide weed control for 2 to 4 months in most growing mediums.
- 5 Do not apply preemergence herbicides to seeded beds or to non-rooted plants or in greenhouses.

WEED CONTROL FOR HOMEOWNERS: WOODY ORNAMENTALS

HERBICIDE	AMOUNT OF FORMULATION/ GAL PER 1000 SQ FT	REENTRY INTERVAL (REI) IN HOURS	REMARKS AND PRECAUTIONS
POST-EMERGENCE GRASS CONTROL			
<i>clethodim</i> Envoy Plus 0.97 lb/gal	0.3–0.7 fl oz	24 H	Apply to actively growing grasses that are not drought stressed. Make sure to add a crop oil concentrate at 1% V/V to the spray solution. Refer to label for recommended list of ornamentals. Envoy Plus will not control broadleaf weeds or nutsedges.
<i>fluzifop-P</i> Grass-B-Gon and others	See label.	12 H	Apply post-emergence to actively growing grasses that are not drought stressed. Refer to the label to determine if a surfactant is necessary and for a recommended list of ornamentals. <i>Fluzifop</i> will not control broadleaf weeds or nutsedges.
<i>sethoxydim</i> Segment I 1 lb/gal Segment II 1.5 lb/gal	0.8–1.4 fl oz 0.6–0.9 fl oz	12 H	Apply post-emergence to actively growing weedy grasses that are not drought stressed. DO NOT add a surfactant or crop oil concentrate to Vantage. Vantage will not control broadleaf weeds or nutsedges.
ORGANIC AND ORGANIC-LIKE HERBICIDES¹			
Acetic acid Weed Pharm, 30% Pure Vinegar, and others	Sold as 15, 20, and 30% concentrate. Activity of weeds will depend on weed species. Try to use on young tender plants for best results. Can use at full concentrate, but can be diluted. 25 and 50% spray dilutions may provide adequate control.	All < 12 H	Currently, all the acids and oils only provide burndown capabilities and will only control plants with shallow root systems (i.e., crabgrass, bittercress, etc.). Multiple applications will be required to control deep-rooted perennials (i.e., yellow and purple nutsedge, bermudagrass, Florida betony, etc.). DO NOT allow spray mist to contact foliage of desirable plants as severe injury can occur. Avoid applications to drought stressed weeds. None of the listed products will provide pre-emergence weed control.
Citrus oil Greenmatch, Avenger Weed Killer	Some ready to use (RTU) products, but concentrates require diluted spray concentrations from 12.5% to 25% V/V (volume to volume)		
Citric acid C-Cide	Use undiluted on difficult weeds (i.e. bermudagrass). For less difficult weeds, dilute with water at 1 part C-Cide to 3 parts water or 1 part C-Cide to 2 parts water.		
Clove oil Burnout II, Matratec, and others	Some ready to use (RTU) products, but concentrates vary but usually 1 part product to 3 parts water		
Clove oil / cinnamon oil WeedZap	Make a 5% solution V/V		
Herbicidal Soap BioSafe Weed Control, Scythe, and others	Most advise making a 5–15% spray solution		
Corn Gluten Weed Prevention Plus, Luscious Lawn, others	Rates vary by product but approximately 1000–2000 lbs/A		

¹ In the United States there are several organic certifications but in any organic operation the pesticides have to be certified by OMRI (Organic Material Review Institute) the herbicides in this section are not all certified by OMRI, but are considered safer than conventional herbicide.

ORNAMENTALS: WEED RESPONSE TO HERBICIDES

Mark A. Czarnota, Extension Horticulturist—Weed Science

	<i>dichlobenil</i>	<i>dimethenamid</i>	<i>flumioxazin</i>	<i>indaziflam</i>	<i>isoxaben</i>	<i>oxadiazon</i>	<i>simazine</i>
TIME OF APPLICATION:	PRE-EMERGENCE						
PERENNIAL WEEDS (control of plants)							
bahiagrass		P	P	P	P	P	P
bermudagrass		P	P	P	P	P	P
dallisgrass		P	P	P	P	P	P
nutsedge, purple	G	P	P	P	P	P	P
nutsedge, yellow	G	F	P	P	P	P	P
tall fescue		P	P	P	P	P	P
wild garlic/ wild onion	G	P	P	P	P	P	P
ANNUAL GRASSES (control of plants from seed with pre-herbicides, control of plants with post-herbicides)							
annual bluegrass	G	G	E	E	P-F	G	G
crabgrass	G	G	E	E	P-F	G	G
goosegrass	G	G	E	E	P	E	
ANNUAL SMALL SEEDED BROADLEAF WEEDS (control of plants from seed with pre-herbicides, control of plants with post-herbicides)							
bittercrosses		E	E	E	G	G	F
common chickweed	G	E	E	E	E	G	E
deadnettle	G			E			G
dodder	E			E			
henbit	G		E	E	E	G	E
hop clovers	G			E	G	G	E
knotweed	G		E	E		G	E
lespedeza	G			E	F	G	E
morningglories	F	F	G	E	G	F	G
mustards	G	G	G	E	F	E	E
niruri/phyllanthus		E	E	E	E	G	G
spurge	G	E	E	E	E	F	E
woodsorrel	G	E	E	E	E	E	E
PERENNIAL BROADLEAF WEEDS (control of plants from seed with pre-herbicides, control of plants with post-herbicides)							
clovers	G	G	E	G	G	G	E
dandelion	G		E	G	G	G	G
dichondra	P (labeled)		E				
docks	G		E		G		
Florida betony	E						
mallow			E	G		G	G
mouseear chickweed	G		E	G		G	G
mugwort	E						
pennywort	G						
plantain			G		G	G	

E—Excellent Control (>90%) G—Good Control (70–90%) F—Fair Control (50–70%) P—Poor Control (<50%) If no symbol is given, weed response is unknown.

ORNAMENTALS: WEED RESPONSE TO HERBICIDES

	<i>oxyfluorfen</i>	<i>prodiamine</i>	<i>trifluralin</i>	<i>clethodim</i>	<i>clopyralid</i>	<i>diquat</i>	<i>fluazifop</i>	<i>glufosinate</i>
TIME OF APPLICATION:	PRE-EMERGENCE			POST-EMERGENCE				
PERENNIAL WEEDS (control of plants)								
bahiagrass	P	P	P	G	P	P	G	P
bermudagrass	P	P	P	G-E	P	P	G-E	P
dallisgrass	P	P	P	G	P	P	G	P
nutsedge, purple	P	P	P	P	P	P	P	P
nutsedge, yellow	P	P	P	P	P	P	P	P
tall fescue	P	P	P	G	P	P	G	P
wild garlic	P	P	P	P	P	P	P	P
ANNUAL GRASSES (control of plants from seed with pre-herbicides, control of plants with post-herbicides)								
annual bluegrass	G	E	G	E	P	G	E	G
crabgrass	G	E	E	E	P	G	E	G
goosegrass	G	G	G	E	P	G	E	G
ANNUAL SMALL SEEDED BROADLEAF WEEDS (control of plants from seed with pre-herbicides, control of plants with post-herbicides)								
bittercrosses	G	G	G	P		G	P	G
common chick weed	G	G	G	P		G	P	E
deadnettle		G	G	P		G	P	G
dodder		P		P			P	
henbit	G	G	G	P		G	P	E
knotweed				P			P	E
lespedeza	G	G	G	P	E	F	P	F
morningglories		G	F	P		G	P	P
mustards	G	F	F	P		G	P	G
niruri/phyllanthus	G	G	P	P		G	P	G
spurge	G	G	G	P		G	P	G
woodsorrel	G	G	F	P		G	P	G
PERENNIAL BROADLEAF WEEDS (control of plants from seed with pre-herbicides, control of plants with post-herbicides)								
clovers	G	E	G	P	E	F	P	F
dandelion	G	G	G	P	G	G	P	P
dichondra				P	P		P	
docks	G	G	G	P	G	P	P	P
Florida betony				P	P	P	P	P
mallow	G	G	G	P		G	P	G
mouseear chickweed	G	G	G	P		G	P	G
mugwort				P	E	G	P	P
pennywort				P	G	G	P	P
plantain	G	G	G	P	P	G	P	F

E—Excellent Control (>90%) G—Good Control (70–90%) F—Fair Control (50–70%) P—Poor Control (<50%) If no symbol is given, weed response is unknown.

ORNAMENTALS: WEED RESPONSE TO HERBICIDES

	<i>glyphosate</i>	<i>halosulfuron</i>	<i>paraquat</i>	<i>pelargonic acid</i>	<i>sethoxydim</i>	<i>sulfosulfuron</i>	<i>triclopyr</i>
TIME OF APPLICATION:	POST-EMERGENCE						
PERENNIAL WEEDS (control of plants)							
bahiagrass	G	P	P	P	G	P	P
bermudagrass	G	P	P	P	G	P	P
dallisgrass	E	P	P	P	G	P	P
nutsedge, purple	G	E	P	P	P	E	P
nutsedge, yellow	G	E	P	P	P	E	P
tall fescue	E	P	P	P	G	P	P
wild garlic	G	G	P		P	G	
ANNUAL GRASSES (control of plants from seed with pre-herbicides, control of plants with post-herbicides)							
annual bluegrass	E	P	E	G	P-F	P	P
crabgrass	G	P	G	G	E	P	P
goosegrass	E	P	F-G	F	E	P	P
ANNUAL SMALL SEEDED BROADLEAF WEEDS (control of plants from seed with pre-herbicides, control of plants with post-herbicides)							
bittercresses	G		E	F	P		G
common chickweed	E		E	G	P	G	G
deadnettle	G		E	G	P	G	G
dodder	E				P		
henbit	E		E	G	P	G	G
knotweed	E		E	G	P		G
lespedeza	E			F	P	G	G
morningglories	G		F-G	F	P		G
mustards	E		E	G	P	G	G
niruri/phyllanthus	E		E		P		G
spurge	E		E	G	P		G
woodsorrel	E		E	G	P		G
PERENNIAL BROADLEAF WEEDS (control of plants from seed with pre-herbicides, control of plants with post-herbicides)							
clovers	F			P-F	P	G	G
dandelion	E	G		P	P	G	G
dichondra	E				P		G
docks	E				P		G
Florida betony	G				P		G
mallow	E			F	P		G
mouseear chickweed	E			G	P	G	G
mugwort	E			F	P	G	F
pennywort	E				P		G
plantain	E				P		G

E—Excellent Control (>90%) G—Good Control (70–90%) F—Fair Control (50–70%) P—Poor Control (<50%) If no symbol is given, weed response is unknown.

HOME ORNAMENTAL AND TREE DISEASE CONTROL

GENERAL FUNGICIDE GUIDELINES

Elizabeth Little, Extension Plant Pathologist

Prevention in the home landscape is the key to reducing diseases in and around your yard. Several disease preventive practices can be used before resorting to spraying pesticides. They include: 1) Selecting disease-free plants from accredited nurseries and garden centers; 2) Selecting resistant ornamental varieties; 3) Site selection and planning in order to grow plants that are appropriate for the site; 4) Proper plant care, including proper fertilization, irrigation, and removing dead and diseased plant parts that could harbor pathogens; and 5) Regular scouting for potential problems. The application of pesticides should be the last option for the home. Obtain an accurate identification of the problem and a recommendation from the UGA Extension system before applying any pesticides. **REMEMBER TO ALWAYS READ AND FOLLOW THE LABEL CAREFULLY.**

This guide has two sections: **PART A** is a list of commonly occurring plant pathogens/diseases and the materials that can be used to control them (including the active ingredient and brand name); **PART B** is a list of commonly grown herbaceous and woody ornamental plants and trees and some of the diseases that occur on

them. Plant names in **PART B** are listed alphabetically according to the scientific name of the plant. If it is uncertain whether a fungicide can be safely used on a plant species, a small number of plants should be treated to test for phytotoxicity prior to treating the entire crop. Always refer to the fungicide label for directions.

The products listed can be found at local garden retail centers and on-line at particular locations.

**Keep in mind this is not an all-inclusive list of plants or products. Contact your local county Extension agent for more information regarding plants or pesticide control products.

△ FOLLOW ALL LABEL DIRECTIONS CAREFULLY. △

△ PAY PARTICULAR ATTENTION TO RE-ENTRY PERIODS AND RE-USE INTERVALS. △

PART A: LIST OF COMMONLY OCCURRING PLANT PATHOGENS/DISEASES AND MATERIALS USED TO CONTROL THEM

DISEASE	ACTIVE INGREDIENT BRAND NAME	CONTACT OR SYSTEMIC
OOMYCETES		
Phytophthora and Pythium root/crown rot	<i>phosphorous acid</i> Monterey AGRI-FOS	Systemic
Downy mildew Phytophthora blight/dieback	<i>chlorothalonil</i> Daconil Ortho Garden Disease Control Hi-Yield Vegetable, Flower, Fruit, & Ornamental Fungicide Ferti-Lome Landscape & Garden Fungicide Bonide Fung-onil Gardentech Daconil	Contact
	<i>copper hydroxide</i> Hi-Yield Copper Fungicide Kocide 101	Contact
	<i>copper salts</i> Monterey LIQUI-COP Bonide Liquid Copper Fungicide Dragon Copper Fungicide	Contact
	<i>phosphorous acid</i> Monterey AGRI-FOS	Systemic

DISEASE	ACTIVE INGREDIENT BRAND NAME	CONTACT OR SYSTEMIC
FUNGAL		
Botrytis blight	<i>chlorothalonil</i> Daconil Ortho Garden Disease Control Hi-Yield Vegetable, Flower, Fruit, & Ornamental Fungicide Ferti-Lome Landscape & Garden Fungicide Bonide Fung-onil Gardentech Daconil	Contact
Armillaria rot/stem rot Black root rot	<i>PCNB</i> Terraclor (several manufacturers)	Contact
Cylindrocladium root rot Rhizoctonia root/stem rot Sclerotinia root rot Sclerotium blight	<i>thiophanate-methyl</i> Cleary's Systemic Fungicide 3336	Systemic
Diplodia tip blight Kabatina dieback Phomopsis dieback Phomopsis needle blight Sclerotinia stem rot Tip blight	<i>thiophanate-methyl</i> Cleary's Systemic Fungicide 3336 WP	Systemic
Powdery mildew	<i>chlorothalonil</i> Daconil Ferti-Lome Broad Spectrum Liquid Fungicide Ortho Garden Disease Control Hi-Yield Vegetable, Flower, Fruit, & Ornamental Fungicide Ferti-Lome Landscape & Garden Fungicide Bonide Fung-onil Gardentech Daconil	Contact
	<i>Jojoba oil</i> Monterey E-Rase RTU	Contact
	<i>myclobutanil</i> Spectracide Immunox Multi-purpose Fungicide Monterey Fungi-Max	Systemic
	<i>Neem oil</i> Green Light Powdery Mildew RTU Ferti-Lome Triple Action RTU	Contact
	<i>potassium bicarbonate</i> soluble powder Monterey Bi-Carb Old Fashioned Fungicide	Contact
<i>sulfur</i> Safer Garden Fungicide Monterey Sulfur 90W Bonide Sulfur Plant Fungicide Hi-Yield Wetttable Dusting Sulfur Top-Cop with Sulfur	Contact	

HOME ORNAMENTAL AND TREE DISEASE CONTROL GENERAL FUNGICIDE GUIDELINES

DISEASE	ACTIVE INGREDIENT BRAND NAME	CONTACT OR SYSTEMIC
FUNGAL (continued)		
Rust	<i>chlorothalonil</i> Daconil Ortho Garden Disease Control Hi-Yield Vegetable, Flower, Fruit, & Ornamental Fungicide Ferti-Lome Landscape & Garden Fungicide Bonide Fung-onil Gardentech Daconil	Contact
	<i>myclobutanil</i> Spectracide Immunox Multi-purpose Fungicide Monterey Fungi-Max	Systemic
	<i>tebuconazole</i> Bayer Disease Control	Systemic
Leaf spots (Alternaria, Anthracnose, Cercospora, Cylindrocladium, Entomosporium, Gnomonia, Heterosporium, Macrophoma, Mycosphaerella, Phyllosticta, Purple-eye, Septoria, Zonate)	<i>chlorothalonil</i> Daconil Ferti-Lome Broad Spectrum Liquid Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bonide Fung-onil Multi-Purpose Fungicide Ortho Garden Disease Control	Contact
	<i>propiconazole</i> Bonide Infuse Ferti-Lome Liquid Systemic Banner MAXX	Systemic
Black spot (Rose) Curvularia leaf blight Leaf streak (daylily) Scab Spot anthracnose Volutella blight Web blight Passalora needle blight	<i>captan</i> Bonide Captan Dragon Captan Wettable Powder Hi-Yield Captan 50% WP	Contact
	<i>copper hydroxide</i> Kocide 101 Nu-Cop 50DF	Contact
	<i>copper salts</i> Monterey LIQUI-COP Bonide Liquid Copper Fungicide	Contact
	<i>mancozeb</i> Bonide Mancozeb Flowable	Contact
	<i>thiophanate-methyl</i> Scotts Lawn Fungus Control Cleary's Systemic Fungicide 3336WP	Systemic

HOME ORNAMENTAL AND TREE DISEASE CONTROL GENERAL FUNGICIDE GUIDELINES

DISEASE	ACTIVE INGREDIENT BRAND NAME	CONTACT OR SYSTEMIC
FUNGAL (continued)		
Leaf/flower gall	<i>chlorothalonil</i> Daconil Ortho Garden Disease Control Hi-Yield Vegetable, Flower, Fruit, & Ornamental Fungicide Ferti-Lome Landscape & Garden Fungicide Bonide Fung-onil Gardentech Daconil	Contact
	<i>mancozeb</i> Bonide Mancozeb Flowable	Contact
	<i>myclobutanil</i> Spectracide Immunox Multi-purpose Fungicide	Systemic
Cankers (various fungal pathogens)	There are various fungal pathogens that cause cankers on woody/herbaceous ornamentals and trees. For the most part, fungicides are not an effective or practical means of control. Keeping plants healthy is the key to preventing and controlling cankers on plants. Avoid stress on the plants (over/under-watering and fertilization). PRUNE infected branches at least 1 inch below infected area and sterilize pruning tools between cuts (10% bleach or alcohol). AVOID WATER STRESS and TREE WOUNDING.	
BACTERIAL		
Fire Blight Bacterial Blight Soft rot	<i>copper</i> Bonide Copper Spray or Dust	Contact
	<i>copper hydroxide</i> Kocide 101 Nu-Cop 50DF	Contact
	<i>copper salts</i> Monterey LIQUI-COP Bonide Liquid Copper Fungicide	Contact
	<i>copper oxinate</i> Concern Copper Soap	Contact
	<i>streptomycin sulfate</i> Bonide Fire Blight Spray Ferti-Lome Fire Blight Spray	Contact
Crown gall	Important to purchase healthy plants. Biological controls are available. Check with county agents. Can use copper compounds, but may be phytotoxic.	
NEMATODE		
	<i>chitin</i> Clandosan	This product is a soil amendment that increases the growth of naturally occurring microorganisms that feed on nematodes (nematode bodies are composed of chitin).
VIRUSES		
	No chemical controls for viral diseases.	

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PART B: LIST OF COMMONLY GROWN ORNAMENTAL PLANTS AND TREES AND SOME OF THE DISEASES THAT OCCUR ON THEM

*This is not an all-inclusive list.

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
A	
Abelia	No major pests . . . leaf spots, powdery mildew, root knot nematode
Abies (Fir)	Botrytis blight, Cytospora canker, oedema (cultural), Phytophthora root/crown rot
Abutilon (Velvet Leaf/Flowering Maple)	Rhizoctonia root rot, web or aerial blight, root knot nematode, stem rot, root rot, rust
Acer (Maple, Box Elder)	Anthracnose, Bacterial scorch, Bacterial Wetwood, Botryosphaeria dieback, Cytospora canker, Ganoderma root rot, leaf spot (various fungi), Nectria canker, Phomopsis dieback, tar spot, Valsa canker, Verticillium wilt, Phyllosticta leaf spot
Achillea (Yarrow)	Powdery mildew
Aconitum (Monkshood)	Southern blight
Aesculus (Horse Chestnut, Buckeye)	Guignardia blotch
Agave (Century Plant)	Crown rot, Anthracnose, Leaf spot
Ageratum (Floss Flower)	Southern blight, Pythium & Phytophthora root rots, Botrytis blight, rust, powdery mildew
Ailanthus (Tree-of-Heaven)	Fusarium stem/root rot
Ajuga (Bugleweed)	Phomopsis dieback, Phytophthora root rot, Pythium root rot, Rhizoctonia root/ crown rot, root knot nematode, Southern blight, viral disease, web blight
Albizia (Mimosa)	Fusarium wilt, Crown dieback (Fusarium)
Alcea (Hollyhock)	Root knot nematode, Rust
Allium (Ornamental Onion)	White rot
Aloe	Root rot (Pythium)
Amelanchier (Service Berry)	Rust, Entomosporium leaf spot, bacterial fire blight, powdery mildew
Anemone	Foliar nematode, Phytophthora root rot, Rust, leaf spot, downy mildew
Anise-tree	Sooty mold, leaf spot (algal)
Antirrhinum (Snapdragon)	Cercospora leaf spot, downy mildew, Phytophthora root/crown rot, Pythium root rot, Rhizoctonia stem rot, Rust, Verticillium Wilt, viral diseases, Botrytis blight
Aquilegia (Columbine)	Pythium root rot, crown rot, Powdery mildew
Arctostaphylos (Bearberry)	Pythium root rot, Phytophthora root rot
Arisaema (Jack-in-the-Pulpit)	Rust
Armeria (Sea Thrift)	Web blight
Aronia (Chokeberry)	Pythium root rot
Aegopodium (Goutweed)	Leaf spot
Artemisia (Dusty Miller)	Rhizoctonia root/stem rot
Asclepias (Milkweed)	Anthracnose
Asclepias tuberosa (Butterfly Weed)	Rhizoctonia stem rot
Asimina (Pawpaw)	Nectria canker, leaf spots
Aster	Powdery mildew, Rust, leaf spot
Astilbe	Pythium root rot, root knot nematodes
Aucuba	Anthracnose, Botryosphaeria dieback, leaf spots, Phomopsis dieback, ring nematode
B	
Bamboo	Pythium root rot
Bedding plants	Damping off (Pythium)

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
B (continued)	
Begonia	Anthracnose, Botrytis blight, Fusarium stem rot, Powdery mildew, Rhizoctonia root/stem rot, root knot nematode
Berberis (Barberry)	Phytophthora root rot
Bergenia	Pythium root rot
Betula (Birch)	Anthracnose, Botryosphaeria dieback, Botrytis blight, red heart, Septoria leaf spot, rust
Buddleia (Butterfly Bush)	Phytophthora root rot, Rhizoctonia root rot
Buxus (Boxwood)	Botryosphaeria dieback, Boxwood decline, Lesion nematode, Macrophoma leaf spot, Phytophthora root rot, Volutella blight
C	
Cactus	Pythium root rot
Caladium	Pythium root rot
Calibrachoa (Million Bells)	Phytophthora crown rot, Rhizoctonia root rot, Southern blight
Callicarpa (Beauty Berry)	No serious problems
Calocedrus (Incense Cedar)	Seiridium canker
Camellia	Anthracnose, Botryosphaeria dieback, leaf/flower gall, leaf spot, oedema (nutritional), petal/flower blight, Phytophthora root rot, Pythium root rot, viral disease
Campanula (Bellflower)	Fusarium crown rot, leaf spots
Campsis (Trumpet Vine)	Anthracnose, mistletoe, powdery mildew
Canna (Canna Lily)	Lesion nematodes, Pythium root rot, bacterial bud rot
Carpinus (Hornbeam)	Pythium root rot, cankers
Capsicum (Ornamental Pepper)	Verticillium wilt
Carya (Hickory)	Downy leaf spot, Gnomonia leaf spot, phomopsis gall, Powdery mildew, Zonate leaf spot
Caryopteris (Bluebeard)	Phytophthora stem/root rot, Pythium root rot
Castanea (Chestnut)	Chestnut blight canker
Catalpa	Bacterial wetwood, Verticillium wilt, Cercospora leaf spot
Catharanthus (Madagascar Periwinkle)	Black root rot, Botrytis blight, Phytophthora blight, Pythium root rot, Rhizoctonia stem/root rot
Cattleya (Orchid)	Bacterial brown spot
Cedrus (Cedar)	Armillaria root rot, Phomopsis needle/twig blight
Celosia (Cockscomb)	Pythium root rot, Rhizoctonia root rot, leaf spot
Cercis (Redbud)	Botryosphaeria dieback, Botrytis blight, Fusarium canker, leaf spot, Verticillium wilt
Chamaecyparis (Falsecypress)	Phytophthora root rot, Seiridium canker, web blight
Chionanthus (Fringe Tree)	Leaf spot
Chrysanthemum (Shasta Daisy, Mum)	Pythium root rot, web blight, Rust, Powdery mildew, foliar nematode, Verticillium wilt
Chrysogenum (Goldenstar)	Southern blight
Cladastris (Yellow Wood)	Anthracnose
Clematis	Leaf spot, Phytophthora root rot
Clivia (Kaffir Lily)	Leaf spot, Southern blight
Coleus	Botrytis blight, Downy mildew
Consolida (Larkspur)	Pythium root rot, Rhizoctonia root/crown rot
Coreopsis (Tickseed)	Botrytis blight, Rhizoctonia root/stem rot, rust, viral disease

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
C (continued)	
Cornus (Dogwood)	Anthrachnose, Botryosphaeria dieback/canker, Botrytis blight, Disculaanthracnose, Fusarium canker, leaf spot, phomopsis dieback, Powdery mildew, Pythium root rot, Septoria leaf spot, spot anthracnose, viral disease
Corylus (Filbert)	Eastern Filbert blight
Cosmos (Mexican Aster)	Botrytis blight, Phomopsis stem canker, powdery mildew, white smut
Cotinus (Smoke Tree)	Anthrachnose, Verticillium wilt
Cotoneaster	Leaf spot, Phytophthora root rot, web blight, fire blight
Crassula (Jade Plant)	Oedema, Pythium root rot
Crataegus (Hawthorn)	Cercospora leaf spot, Entomosporium leaf spot, rust, fire blight
Cryptomeria (Japanese Cedar)	Needle blight, Phomopsis twig blight, Phytophthora root rot
Cupressus (Cypress)	Botryosphaeria dieback, Kabatina dieback, tip blights, Phytophthora root rot, Seiridium canker
Cyclamen	Fusarium Wilt
Cymbidium (Orchid)	Viral disease
D	
Dahlia	Crown gall, Powdery mildew, tuber rot (fungal-Fusarium and Botrytis), root rot, viral disease (mosaic)
Daphne	Anthrachnose, Phytophthora root/stem rot, crown rot (Sclerotium spp.)
Davidia (Dove Tree)	Phomopsis dieback
Delosperma (Ice Plant)	Pythium root rot
Dendranthema (Chrysanthemum)	Bacterial leaf spot, Botrytis blight, Mycosphaerella ray blight, Phytophthora root rot, powdery mildew, Pythium root/stem rot, Rhizoctonia root rot, Septoria leaf spot, leaf rust, Verticillium wilt
Dianthus (Carnation)	Alternaria leaf spot, Botrytis blight, Fusarium stem rot, powdery mildew, Rhizoctonia stem rot, rust, aster yellows, viral disease
Digitalis (Foxglove)	Black root rot, Fusarium root rot, Pythium root rot, Anthracnose
Dimorphotheca (African Daisy)	Botrytis blight
Dracaena	Fusarium blight, Pythium root rot
Duchesnea (Indian Strawberry)	Rust
E	
Echinacea (Coneflower)	Aster yellows, foliar nematodes, Pythium root rot, viral disease
Eichhornia (Water Hyacinths)	Leaf spot
Elaeagnus (Autumn Olive)	Phytophthora root rot
Epiphyllum (Cereus)	Oedema (nutritional)
Epipremnum (Pothos)	Phytophthora stem rot
Erica (Heather)	Phytophthora root rot
Eucalyptus	Anthrachnose, Botryosphaeria dieback, crown gall, Fusarium canker, Phomopsis dieback, Phytophthora root rot, powdery mildew, Pythium root rot
Euonymus	Powdery mildew
Euphorbia (Spurge)	Anthrachnose, Botryosphaeria dieback
Euphorbia pulcherima (Poinsettia)	Bacteria blight, bacterial leaf spot, Botrytis blight, powdery mildew, Pythium root rot, scab
Eustoma (Lisianthus)	Botrytis blight, Fusarium stem/root rot
Exacum (Persian Violet)	Viral disease

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
F	
Fagus (Beech)	Anthraco-nose, Botryosphaeria canker, Hypoxylon canker, viral disease
Fatsia	Leaf spot
Fatsiedra (Bush Ivy)	Botrytis blight, Fusarium root/stem rot, Phomopsis blight, Rhizoctonia root rot, Powdery mildew, scab
Ficus (Fig)	Anthraco-nose, Phytophthora root rot
Ficus benjamina (Weeping Fig)	Anthraco-nose, Phomopsis gall
Forsythia	Botryosphaeria dieback, crown gall, Phomopsis gall, Phytophthora root rot, ringer nematodes, Sclerotinia twig blight, web blight
Fraxinus (Ash)	Anthraco-nose, ash yellows, Botryosphaeria canker, rust
G	
Gaillardia (Blanket Flower)	Pythium root rot, White smut
Galium (Sweet Woodruff)	Rhizoctonia stem/root rot, Southern blight
Gardenia	Anthraco-nose
Gerbera (African Daisy)	Pythium root rot, Botrytis blight
Gladiolus	Botrytis leaf blight, Curvularia leaf blight, Fusarium yellows, Penicillium corm rot, Rhizoctonia corm rot, aster yellows, scab
Gleditsea (Honeylocust)	Botryosphaeria canker, Thyronectria canker
Gloxinia (Sinningia)	Viral disease
Gomphrena (Globe Amaranth)	Leaf spot, root knot nematode
Gypsophila (Baby's Breath)	Bacterial soft rot
H	
Hamamelis (Witchhazel)	Botryosphaeria dieback, leaf spot, powdery mildew
Hedera helix (English Ivy)	Anthraco-nose, Bacterial leaf spot, oedema, Phyllosticta leaf spot, Phytophthora root rot, Pythium root rot, Rhizoctonia root rot
Heliant hemum (Rock Rose)	Botrytis blight
Helianthus (Sunflower)	Alternaria leaf/stem spot, powdery mildew
Helichrysum (Strawflower)	Fusarium stem rot
Helleborus (Hellebore)	Black leaf spot, Botrytis blight, Pythium root rot, Rhizoctonia root rot, Southern blight
Hemerocallis (Daylily)	Anthraco-nose, rust, leaf streak, Southern blight
Heuchera (Coral Bells)	Pythium root rot, leaf spot, downy mildew
Hibiscus	Phytophthora root rot, Pythium root rot, viral disease
Hibiscus syriacus (Rose-of-Sharon)	Leaf spot
Hosta	Anthraco-nose, Botrytis blight, leaf spot, root rot, soft rot, Southern blight, virus X
Hyacinth (Hyacinthus)	Bacterial soft rot, root rot, gray mold
Hydrangea	Anthraco-nose, Armillaria root rot, bacterial leaf spot, Botrytis blight, Cercospora leaf spot, Phytophthora root rot, Pythium root rot, powdery mildew
Hypericum (St. Johnswort)	Phytophthora root/stem rot, rust, Rhizoctonia root rot, leaf spots
I	
Iberis (Candytuft)	Anthraco-nose, Pythium root rot
Ilex (Holly)	Anthraco-nose, Bacterial Blight, Black root rot, Botryosphaeria dieback, leaf spot, root knot nematodes, oedema (nutritional), Phomopsis dieback, Phytophthora root rot, Pythium root rot, Rhizoctonia root rot, rust, tar spot, web blight
Ilex glabra (Ink Berry)	Black root rot, Phytophthora root rot

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
I (continued)	
Impatiens	Alternaria leaf spot, bacterial fasciation, Botrytis blight, Fusarium crown rot, powdery mildew, Pythium root/stem rot, Rhizoctonia root/stem rot, root knot nematodes, Verticillium wilt, viral diseases
Ipomoea (Morning Glory)	Rust, white rust
Iris	Botrytis blight, Heterosporium leaf spot, soft rot, viral disease (mosaic)
J	
Juniperus (Juniper)	Kabatina tip blight, Pestalotia dieback, Phytophthora root rot, Pythium root rot, rust
Juniperus virginiana (Eastern Red Cedar)	Cercospora blight, Kabatina tip blight, Pestalotia blight, Phomopsis tip blight, rust
K	
Kalmia (Mountain Laurel)	Botryosphaeria dieback, Cercospora leaf spot
L	
Lagerstroemia (Crape Myrtle)	Leaf spot, powdery mildew, sooty mold
Lantana	Leaf spot, root knot nematode, fusarium wilt
Laurus nobilis (Bay Laurel)	Cercospora leaf spot
Lavandula (Lavender)	Phytophthora root rot, Pythium root rot
Leucothoe (Drooping Leucothoe)	Botryosphaeria dieback, Cylindrocladium leaf spot, Phyllosticta leaf spot, Phytophthora root rot
Ligustrum (Privet)	Anthracnose, Cercospora leaf spot, Phytophthora root rot
Lilium (Lily)	Anthracnose, Botrytis blight, Pythium root rot, viral disease (mosaic)
Limonium (Statice)	Phytophthora root rot, Pythium root rot, Rhizoctonia root rot
Liquidambar (Sweet Gum)	Cercospora leaf spot, Sphaeropsis gall
Liriodendron (Tulip Tree)	Powdery mildew, sooty mold
Liriope (Lilyturf)	Anthracnose, foliar nematodes, Mycosphaerella leaf spot, Phytophthora leaf spot, viral disease
Lobelia	Pythium root rot, viral disease
Lobularia (Sweet Alyssum)	Rhizoctonia root rot
Lonicera (Honeysuckle)	Botryosphaeria dieback, Botrytis blight, Herpobasidium leaf blight, powdery mildew, witches' broom
Lupinus (Lupine)	Anthracnose, brown spot, Pythium root rot
Lysimachia (Loosestrife)	Rhizoctonia root/stem rot, Southern blight
M	
Magnolia	Bacterial leaf spot, powdery mildew
Malus (Crabapple)	Coniothyrium leaf spot, fire blight, frog-eye leaf spot, powdery mildew, rust, scab
Malva (Mallow)	Rust
Miscanthus	Blight
Morus (Mulberry)	Berry blight, bacterial leaf blight, bacterial wetwood
Myosotis (Forget-Me-Not)	Web blight
Myrica (Bayberry)	Botryosphaeria dieback, Phytophthora root rot
Myrica cerifera (Wax Myrtle)	Anthracnose, Botryosphaeria dieback, Phytophthora root rot, Septoria leaf spot
Myrtle (Myrtus)	Leaf spot, stem rot (Sclerotinia)

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
N	
Nandina (Heavenly Bamboo)	Cercospora leaf spot, Phytophthora root rot, Pythium root rot
Narcissus (Daffodil, Jonquil)	Fusarium bulb rot & various other fungal bulb rots, leaf spot & blight, virus
Nelumbo (Water Lily)	Cercospora leaf spot
Nerium (Oleander)	Leaf spot, anthracnose, bacterial blight, sooty mold
Nyssa sylvatica (Black Gum)	Anthracnose, Botryosphaeria dieback, leaf spot
O	
Ocimum basilicum (Basil)	Alternaria leaf spot, Fusarium crown rot
Ophiopogon (Mondo Grass)	Anthracnose
Oxalis (Wood Sorrel)	Rust, leaf spot, root knot nematode
Oxydendrum arboreum (Sourwood)	Leaf spot
P	
Pachysandra	Leaf spot, Pythium root rot, southern blight, Volutella blight, virus
Paeonia (Peony)	Botrytis blight, Cercospora leaf spot, Cladosporium leaf/stem blotch, Rhizoctonia root rot, Phytophthora blight
Parthenocissus (Boston Ivy)	Phyllosticta leaf spot
Parthenocissus quinquefolia (Virginia Creeper)	Downy mildew, leaf spot
Pelargonium (Geranium)	Bacterial blight, bacterial leaf spot, bacterial wilt, Botrytis blight, oedema (nutritional), Pythium root rot, blackleg, Rhizoctonia root rot, rust, viral disease
Petunia	Botrytis blight, Fusarium root/crown rot, Phytophthora root/crown rot and foliage blight, Pythium crown/root rot, Rhizoctonia root/stem rot, viral disease
Phalaris (Canarygrass)	Web blight
Phlox	Bacterial leaf spot, black root rot, Colletotrichum stem canker, powdery mildew, Pythium root rot, southern blight, viral disease, web blight
Photinia (Japanese Photinia Red-Tip)	Bacterial blight, Botryosphaeria canker, Entomosporium leaf spot, powdery mildew, Armillaria root rot
Physocarpus (Ninebark)	Powdery mildew, Rhizoctonia root rot
Picea (Spruce)	Cytospora canker, Phytophthora root rot, Pythium root rot, needle blight, tip blight
Pieris (Japanese Pieris)	Botryosphaeria dieback, Phomopsis canker, Phytophthora root rot
Pinus (Pine)	Armillaria root rot, Atropellis twig canker, Cenangium dieback, Cytospora canker, Diplodia tip blight, Dothiostroma needle blight, Eastern gall rust, Fusiform rust, needle cast, needle rust, Phaciodyncis canker, Phytophthora root rot, pinewood nematodes
Pistacia (Pistache)	Verticillium wilt
Platanus (Sycamore)	Anthracnose, Bacterial scorch, Botryosphaeria dieback, powdery mildew
Platycodon (Balloon Flower)	Rhizoctonia crown rot
Polygonatum (Solomon Seal)	Penicillium rot
Populus (Poplar)	Botryosphaeria canker, leaf spot
Portulaca (Purslane)	Rhizoctonia stem rot, root knot nematode
Potentilla (Cinquefoil)	Foliar nematodes, rust
Pratia	Southern blight

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
P (continued)	
Primula (Primrose)	Leaf spot, Pythium and Rhizoctonia root/stem rot
Prunus (Flowering Apricot/Cherry/Peach/Plum)	Bacterial blossom blight, bacterial leaf spot, bacterial shot hole, bacterial scorch, black knot, blossom blight/ brown rot, Cytospora canker, Nectria canker, peach leaf curl, Phomopsis canker, white rot
Prunus laurocerasus (Cherry Laurel)	Anthracnose, bacterial leaf spot, bacterial shot hole, Botryosphaeria dieback, Phomopsis dieback, leaf spots, Phytophthora root rot, Pythium root rot, zonate leaf spot
Pseudotsuga (Douglas Fir)	Botryosphaeria canker, Swiss needle cast
Pyracantha (Firethorn)	Botryosphaeria dieback, fire blight, Phomopsis dieback, scab
Pyrus calleryana (Flowering Pear)	Botryosphaeria canker, Entomosporium leaf spot, fire blight, rust
Q	
Quercus (Oak)	Anthracnose, Armillaria root rot, bacterial scorch, bacterial wetwood, Botryo-sphaeria canker, Cylindrocladium root rot, Discula anthracnose, Hypoxylon canker, leaf blister, Phomopsis dieback, powdery mildew, rust, smooth patch, spot anthracnose, Tubakia leaf spot
R	
Ranunculus (Buttercup)	Bacterial blight, web blight, viral disease (mosaic), Verticillium wilt
Rhaphiolepis (Indian Hawthorn)	Entomosporium leaf spot
Rhododendron (Azalea)	Anthracnose, Armillaria root rot, Botryosphaeria dieback, Botrytis blight, Cercospora leaf spot, Colletotrichum leaf spot, leaf and flower gall, lesion nematodes, oedema (nutritional), Pestalotia leaf spot, petal blight, Phomopsis dieback, Phyllosticta leaf spot, Phytophthora dieback, Phytophthora root/stem rot, powdery mildew, web blight
Rhus (Sumac)	Verticillium wilt, Bot canker & dieback, powdery mildew, root rot
Rosa (Rose)	Anthracnose, black spot, Botryosphaeria dieback, Botrytis blight, crown gall, downy mildew, Phomopsis Canker, powdery mildew, Pythium root rot, rose rosette disease, viral disease
Rosmarinus (Rosemary)	Botrytis blight, crown gall, Phytophthora root rot, Pythium root rot
Rudbeckia (Black-Eyed Susan)	Pythium root rot, Rhizoctonia stem rot, Septoria leaf spot
S	
Sagittaria (Arrowhead)	Leaf spot, leaf smut
Salix (Willow)	Armillaria root rot, Botryosphaeria dieback, Botrytis blight, black canker, Cercospora leaf spot, crown gall, rust, scab, white rot
Salvia	Bacterial leaf spot, downy mildew, Pythium root rot, Rhizoctonia stem rot, Botrytis blight
Sansevieria (Snake Plant)	Bacterial soft rot, leaf spots, root knot nematode, Fusarium rot
Scabiosa (Pincushion Flower)	Botrytis blight
Schefflera (Umbrella Tree)	Oedema (nutritional), Pythium root rot
Sedum (Stone Crop)	Anthracnose, bacterial soft rot, bacterial stem rot, Diplodia stem rot, leaf spot, Phytophthora stem rot, Pythium root rot, Rhizoctonia stem/root rot, root knot nematodes, web blight
Setcreasea (Purple Heart)	Leaf spot
Solidago (Goldenrod)	Rust, powdery mildew, leaf spot
Spiraea	Leaf spot
Styrax (Silverbell)	Leaf spot
Syringa (Lilac)	Anthracnose, bacterial blight, Botrytis blight, Cercospora leaf spot, Phytophthora root rot, powdery mildew

COMMONLY GROWN ORNAMENTALS AND SOME OF THE DISEASES THAT OCCUR ON THEM

PLANT SCIENTIFIC NAME (COMMON NAME)	DISEASES
T	
Tagetes (Marigold)	Alternaria blight, Botrytis blight, crown gall, Fusarium stem/root rot, Pythium root rot, Rhizoctonia stem rot
Taxus (Yew)	Botryosphaeria dieback, Phytophthora root rot
Thuja (Arborvitae)	Armillaris root/stem rot, Cytospora canker, Kabatina tip blight, Phomopsis twig/ needle blight, Phytophthora root rot, Pythium root rot, Seiridium twig canker, web blight, Diplodia canker/ dieback
Thymus (Thyme)	Pythium root rot
Tilia (Linden)	Spot anthracnose, white rot
Tradescantia virginica (Spiderwort)	Southern blight
Tsuga (Hemlock)	Armillaria root rot, damping-off, rust
Tulipa (Tulip)	Botrytis blight, Fusarium basal rot, bulb rot (various fungi), virus color breaking
U	
Ulmus (Elm)	Bacterial wetwood, bacterial leaf scorch, Botryosphaeria canker, Cytospora canker, Dutch elm disease, Verticillium wilt
V	
Verbena (Vervain)	Powdery mildew, Pythium root rot, bacterial wilt
Veronica (Speedwell)	Phytophthora root rot, rust, powdery mildew
Viburnum (Snowball Bush)	Spot anthracnose, bacterial scorch, Botryosphaeria dieback, Botrytis blight, phoma leaf spot, Phytophthora root rot, Rhizoctonia root rot
Vinca minor (Periwinkle)	Oedema (nutritional), Phoma dieback, Phomopsis dieback, Phyllosticta stem rot/ leaf spot, Pythium root rot, Rhizoctonia root rot, Southern blight, Botrytis blight
Viola (Pansy)	Anthracnose, black root rot, Botrytis blight, Cercospora leaf spot, Phytophthora root/crown rot, Pythium root/crown rot
W	
Weigala	Phytophthora root rot, Pythium root rot
Wisteria	Botryosphaeria dieback
Y	
Yucca	Bacterial soft rot, Mycosphaerella leaf spot
Z	
Zinnia	Alternaria blight, bacterial leaf spot, Botrytis stem canker, powder mildew, Pythium root rot