HOME VEGETABLE DISEASE CONTROL

Elizabeth Little, Extension Homeowner IPM Specialist

**Please note: This is not an all-inclusive list of products available to homeowners. It is a list of commonly used products available at local retail locations. This guide can be used to find additional products by referencing the active ingredient and searching for products containing that active ingredient at your local store. Remember to ALWAYS read the label carefully and follow ALL directions, restrictions, and precautions listed in the manufacturer's label!

COMMODITY DISEASE	BRAND/TRADE NAME	ACTIVE INGREDIENT	RATE	MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
ASPARAGUS					
Cercospora Leaf spot	Bonide Mancozeb Flowable	Mancozeb	2 tbsp./gal.	120	
Crown Rot and Root Rot	Dragon Mancozeb Disease Control	Mancozeb	6 tsp./gal.		
Bacterial Blight	Bonide Copper Spray or Dust	Copper	2 ½ - 5 ozs./gal.	NTL	See label
	Dragon Copper Fungicide	4 tsp./gal.	NTL		
	Hi-Yield Copper Fungicide	2 - 4 tsp./gal.	NTL		
Powdery Mildew	Sulfur - spray or dust (Several brands until available)	See label	NTL		Apply at first appearance and continue on 7- 10 day intervals disease is no longer present.
Rust	Ortho Garden Disease Control	Chlorothalonil	1.0 Tbs./gal.	7	See Label.
	Sulfur (spray or dust)	Sulfur	NTL		Begin application during early bloom stage. (With Top Cop: 4 applications are usually sufficient).
	Dragon Mancozeb Disease Control	Mancozeb	3 tsp./gal	180	Apply these products only after harvest.
	Bonide Mancozeb Flowable	Mancozeb	4 tsp./gal	180	4 applications are usually sufficient
BEANS (Lima and Snap)					
Anthracnose	GardenTech Daconil Fungicide	Chlorothalonil	2.25 lbs./acre	7	9 lbs. Maximum Seasonal Application rate
Bacterial Blight	Bonide Liquid Copper fungicide	Copper Soap	0.5-2 oz/gal	NTL	For protective sprays, begin application 2 weeks before disease normally appears.
Botrytis (Gray mold)	GardenTech Daconil Fungicide	Chlorothalonil	2.25 lbs./acre	7	9 lbs. Maximum Seasonal Application rate
	Ortho Garden Disease Control				
	Topsin M 70WP	Thiophanate-methyl	1-2 lbs./acre	See label.	Make first application when 10-3 0% of plants have at least one open bloom.
Powdery mildew	Safer Garden Fungicide	Sulfur	4 tbsp /gal water	Up to day before harvest.	Spray at first sign of disease. Begin when first true leaves form or at first sign of disease.
	Bonide Sulfur Plant Fungicide		1.5 to 3 tbsp /gal. water		
	Hi-Yield Dusting Wettable Sulfur	(Several products)	see label		
Root rot and seedling disease (Rhizoctonia)	Terraclor 75%WP	PCNB	see label	Apply only at planting time.	Apply as directed at planting time.

COMMODITY DISEASE	BRAND/TRADE NAME	ACTIVE INGREDIENT	RATE	MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
BEANS (Lima and Snap) (continued)					
Rust	Sulfur	Sulfur	2 qts/ac.		Begin during early bloom or when disease first threatens.
	Dragon Mancozeb Disease Control	Mancozeb	see label		
	Ortho Garden Disease Control	Chlorothalonil	see label		
White mold (Sclerotinia)	Terraclor 75%WP	PCNB	see label		Apply only at planting time.
Root Knot (Nematode)	Hi-Yield Nem-A-Cide Nematode Control	Chitin	See label		A single application is sufficient for nematode. For best results, a soil analysis for nematode typing and counts of adults should be done before and after each crop season.
BEETS					
Downy Mildew, Leaf spots, and Blights	Copper Sulfate	Sulfur	2.0 -3.0 lbs.	NTL	Begin when disease appears and repeat every. 7-10 days.
	Bonide Liquid Copper Fungicide	Copper	1 tsp./gal.	NTL	Begin when disease appears and repeat every. 7-10 days.
	Dragon Copper Fungicide	Copper	1 ½ tsp./gal.		Begin application when disease first appears and then every 7-14 days.
Seed-rot & Damping off	Hi-Yield Captan Fungicide 50% WP	Captan	½ tsp./1 Dry seed		Not for use at or immediately before planting. Mix thoroughly in a paper bag or glass jar.
BROCCOLI, CABBAGE, BRUSSELS SPROUTS					
Wire Stem	Terraclor 75WP	PCNB	15 -20 lbs./100 gals./water		Apply ½ pint of solution around each plant at transplanting.
Alternaria Leaf spot & Downy mildew	Dragon Copper Fungicide	Copper	1 tsp./gal.	NTL	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 ½ tsp./gal.	0	
	Bonide Copper Spray or Dust	Copper	2 ¼ - 3 ¼ tsp./gal.	NTL	
	Bonide Liquid Copper Fungicide	Copper	4 - 6 tsp./gal.	NTL	
	Basic Copper Sulfate		1.0 - 3.0 lbs.	NTL	Apply to 500 ft^2 of garden area. Apply after transplant, emergence of seeded crop, or when conditions favor disease development.
	Hi-Yield Daconil	Chlorothalonil	3 tbs./5 -15 gals. /water		
Powdery mildew	Sulfate	Sulfur		NTL	
	Hi-Yield Copper Fungicide	Copper	2 -3 tsp./gal.	NTL	
	See label, several brands available				
CABBAGE					
Alternaria Leaf spot	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 ½ tsp./gal.	0	See Label.
Club Root	Terraclor 75%WP + hydrated lime	PCNB	2 lbs./100 gals. 1,500 lbs.		Broadcast and disc lime in soil 0 to 3 days before planting.
Damping-Off (plant bed)	Terraclor 75%WP	PCNB	½ lbs. (actual)		Sterilize seedbed soil. Drench seedbed after planting. If plants are purchased, be sure they are disease-free.

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CABBAGE (continued)					
Seed-rot & Damping Off	Hi-Yield Captan Fungicide 50% WP	Captan	½ tsp./1 lb. Dry seed		Not for use at or immediately before planting. Mix thoroughly in a paper bag or glass jar.
Downy Mildew	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 ½ tsp./gal	0	Apply every 14 days.
	Bonide Liquid Copper	Copper	1 1/3 - 2 tsp./gal.	None	
CANTALOUPE					
Alternaria Leafspot	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	0	See Label. Apply every 7 -10 days as needed.
	Bonide Copper Sulfate	Copper	2 ¼ tsp.	NTL up to day of harvest	
	Bonide Liquid Copper Fungicide	Mancozeb	4 tsp./gal	5	
	Dragon Mancozeb Disease Control		3 - 4 ¼ tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide	Copper	2 - 3 tbs./gal.	up to day of harvest	
	Dragon Copper Fungicide				
Anthracnose	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	0	Use western-grown seed. Apply fungicides when true leave fully expand. Continue every 7 - 14 days until harvest.
	Basic Copper Sulfate		1.0 - 3.0 lbs.	NTL	Apply every 7 - 10 days as needed.
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz../gal.	NTL	
Downy mildew	Ortho Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	0	See Label
	Bonide Copper Sulfate	Copper	2.0 lbs.	NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Gummy Stem Blight	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	NTL NTL	Use western-grown seed. Apply fungicides when true leave fully expand. Continue every 7 - 14 days until harvest.
	Basic Copper Sulfate	Cooper			
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	Apply every 7 - 10 days as needed.
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz../gal.	NTL	
Powdery Mildew	Basic Copper Sulfate	Copper	2.0 lbs.	NTL	
	Bonide Liquid Copper Fungicide		4 - 6 tsp./gal	up to day of harvest.	
	Dragon Copper Fungicide		4 - 6 tsp./gal	up to day of harvest	
	Bonide Copper Spray or Dust		2 ¼ - 5 ¾ ozs./gal	NTL	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 tbs./gal.	0	
Seed-rot & Damping Off	Hi-Yield Captan Fungicide 50% WP	Captan	½ tsp./1 lb. Dry seed		Not for use at or immediately before planting. Mix thoroughly in a paper bag or glass jar.

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CARROTS					
Alternaria Blight	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	7	Apply every 7-14 days as needed.
	Bonide Copper Fungicide (Bordeaux)	Copper-lime	4-6 tsp./gal.	up to day of harvest	
Cercospora Leaf Blight	Hi-Yield Copper Fungicide	Copper	2-3 tsp./gal	NTL	
	Dragon Copper Fungicide		4-6 tsp./gal.	up to day of harvest	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 tbs./gal.	see label	
	Bonide Copper Spray or Dust	Copper	0.5-2 oz/gal	see label	
COLLARDS					
Alternaria Leafspot & Downy Mildew	Sulfur products	Sulfur	1 - 2 qts.	NTL	
	Safer Garden fungicide		2 qts	NTL	
CORN (SWEET)					
Leaf Blights and Rust	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2 tsp./gal.	7	See Label.
	Dragon Mancozeb Disease Control	Mancozeb	1½ tbsp./gal.	7	
	Bonide Mancozeb Plant Fungicide				
Seed-rot & Damping Off	Hi-Yield Captan Fungicide 50%WP	Captan	½ tsp./1 lb. Dry seed		Not for use at or immediately before planting. Mi x thoroughly in a paper bag or glass jar.
CUCUMBER					
Angular Leafspot	Hi-Yield Copper Fungicide	Copper Hydroxide	2 tsp./gal.	NTL	
	Bonide Copper Spray or Dust	Copper	2¼-5¾ ozs./gal.	NTL	
	Dragon Copper Fungicide		4-6 tbs./gal.	NTL	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 tbs./gal.	NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3 - 4¾ tsp./gal.	NTL	
	Bonide Mancozeb	Mancozeb	4-5 tsp/gal	5	
Anthracnose	Ortho Disease Control (Daconil 2787)	Chlorothalonil	2 tsp./gal.	NTL	
	Basic Copper Sulfate	Copper Sulfate	2¼-5¾ ozs./gal.	NTL	Apply every 7-10 days as needed.
	Bonide Copper Spray or Dust	Bordeaux	4.5-11.5 tsp/gal	0	
	Dragon Mancozeb Disease Control	Mancozeb	See label	5	
Alternaria Leafspot	Ortho Disease Control (Daconil 2787)	Chlorothalonil	2¼ - 2¾ tsp.	NTL	
	Basic Copper Sulfate	Copper Sulfate	4 tsp./gal.	NTL up to day of harvest	Apply every 7-10 days as needed.
	Bonide Liquid Copper Fungicide		2¼-5¾ ozs./gal.	NTL	
	Bonide Copper Spray or Dust		4-6 tsp./gal	up to day of harvest	
	Dragon Copper Fungicide				

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CUCUMBER (cont inued)					
Corynespora Leafspot	Ortho Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	NTL	
	Bonide Copper Spray or Dust	Copper	2¼-5¾ ozs./gal.	up to day of harvest	
Downy Mildew	Ortho Disease Control (Daconil 2787)	Chlorothalonil	2 tsp./gal.	NTL	Apply when disease threatens and every 7-10 days.
	Basic Copper Sulfate	Copper Sulfate	NTL		Apply every 7-10 days as needed.
	Hi-Yield Copper Fungicide	Copper	2 tsp./gal.	up to day of harvest	
	Bonide Copper Spray or Dust	2¼-5¾ ozs./gal.		up to day of harvest	
	Bonide Liquid Copper Fungicide	4 tsp./gal.	0		
	Dragon Copper Fungicide	4-6 tsp./gal.			
	Dragon Mancozeb Disease Control	Mancozeb	3-4¾ tsp./gal.	5	
Fruit & Belly Rot	Ortho Disease Control (Daconil 2787) (Supression only)	Chlorothalonil	1 tbs./gal.	See Label.	
Gummy Stem Blight	Ortho Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	NTL	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Basic Copper Sulfate	Copper Sulfate		NTL	Apply every 7 - 10 days as needed.
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp ./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Powdery Mildew	Basic Copper Sulfate	Copper Sulfate		NTL	Apply every 7-10 days as needed.
	Bonide Liquid Copper Fungicide	Copper	4 - 6 tsp./gal.	up to day of harvest	
	Dragon Copper Fungicide		4 - 6 tsp./gal.	up to day of harvest	
	Bonide Copper Spray or Dust		2¼-5¾ ozs./gal.	NTL	
	Ortho Disease Control (Daconil 2787)	Chlorothalonil	1 tbs./gal.	0	
Scab	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil		NTL	
	Basic Copper Sulfate	Copper Sulfate		NTL	Apply every 7-10 days as needed.
	Bonide Copper Spray or Dust	Copper	2¼-5¾ ozs./gal.	NTL up to day of harvest	
	Dragon Copper Fungicide		4-6 tsp./gal.	0	
	Dragon Mancozeb Disease Control	Mancozeb	3-4¾ tsp./gal.	5	
EGGPLANT					
Damping-Off (plant bed)	Captan 50WP	Captan	4 ½ Tbs.		Begin when all seeds have germinated and repeat at 10-day intervals.
Phomopsis, Alternaria, Anthracnose, Fruit Rots & Leaf Blights	Sulfur products	Sulfur	NTL		
	Hi-Yield Copper Fungicide	Copper	2 tsp./gal.	NTL	Apply at first sign of disease.
GARLIC	(See Onion)				

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IRISH POTATO					
Black Scurf	Terraclor 10 G	PCNB	See label.		Apply according to label directions.
	Terraclor 75 WP	PCNB			
Early Blight and Late Blight	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 Tbs./gal.	NTL	See Label.
	Bonide Copper Spray or Dust	Copper	2¼ - 6 ozs./gal.		
	Dragon Copper Fungicide	4-6 tsp./gal			
	Dragon Mancozeb Disease Control	Mancozeb	2-3 tsp./gal.		
	Bonide Mancozeb Plant Fungicide	1-2 tbsp./ gal.			
KALE					
Powdery Mildew	Sulfur	Sulfur	See Label	0	Spray when disease threatens; 7-10 day intervals.
Alternaria Leafspot Downy Mildew	Sulfur products	Sulfur	See Label	0	
LETTUCE					
Downy Mildew	Hi-Yield Copper Fungicide	Copper	1 tsp./gal.	NTL	
OKRA					
Pod Blight Verticillium Wilt	No foliar fungicides available				Blight is associated with poor pollination—provide good air circulation. Rotate crops that are not susceptible to the Wilt.
Root-knot Nematode	Hi-Yield Nem-A-Cide	Chitin	See label.		One application is usually the only one necessary.
ONION (DRY)					
Purple Blotch Bacterial Leaf Blight Botrytis Leaf Blight Downy Mildew	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1.0 Tbs./gal.		
	Dragon Mancozeb Disease Control	Mancozeb	4¾ tsp./gal.		
	Bonide Mancozeb Plant Fungicide		4 tbsp./gal.		
ONION (GREEN AND GREEN BUNCHING) – GARLIC, LEEK, SHALLOT, ONION GROWN FOR SEED					
Botrytis Leaf Blight	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1.0 Tbs./gal.	14	See Label.
Downy Mildew Neck Rot Purple Blotch	Hi-Yield Copper Fungicide	Copper	2 tsp./gal.	NTL	
	Bonide Liquid Copper Fungicide		4 tsp./gal.	up to day of harvest	
	Dragon Copper Fungicide		4-6 tsp./gal.	up to day of harvest	
	Dragon Mancozeb Disease Control	Mancozeb	2 tsp./gal	7	
	Bonide Mancozeb Plant Fungicide		3 tbsp./gal.	7	

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PEAS (ENGLISH)					
Powdery Mildew	Sulfur (spray or dust)	Sulfur	See label	NTL	Start application at first sign of disease and repeat every 7-10 days. Do not apply when temperature is above 90 degrees or when plants are wet.
Seed-rot & Damping Off	Hi-Yield Captan Fungicide 50%WP	Captan	½ tsp./1 lb. Dry seed	NTL	Not for use at or immediately before planting. Mix thoroughly in a paper bag or glass jar.
BLACK-EYED PEAS (SOUTHERN)					
Scab Anthracnose Mildew Rust	Sulfur	Sulfur	See Label	NTL	Begin during early bloom or when disease first threatens.
Cercospora Leafspot Powdery Mildew Rust	Sulfur products	See Label		NTL	Spray early bloom; repeat at 7 to 10 day intervals. See Label
PEPPER					
Cercospora,	Sulfur	Sulfur	1.0 - 2.0 qts.		NTL
Anthracnose,	Copper	Copper	2.0 - 3.0 qts.		NTL
Phytophthora blight	Hi-Yield Copper Fungicide	Copper Hydroxide	2 2/3 - 4 tsp /gal.		NTL
Fruit Rots, Bacterial Spot	Bonide Liquid Copper Fungicide	Copper	4 - 6 tsp./gal.		NTL
	Dragon Copper Fungicide		4 - 6 tsp./gal.		up to day of harvest
Blossom End Rot	CAB	Calcium	2.0 Tbs.	NTL	Apply at bloom. Make two to three applications at weekly intervals.
Southern Blight .	Terraclor or PCNBP 75W	PCNB	3.0 - 5.0 Tbs		Use ½ pint per plant when transplanting. Rotate with corn or other grasses. Deep plow to cover debris.
PUMPKIN					
Downy Mildew	Ortho Garden Disease Control (Daconil 2787)	Chlorothaloni	2.0 tsp./gal.	0	See Label Apply every 7 - 10 days as needed.
Verticillium Wilt	Basic Copper Sulfate	copper sulfate		NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Anthracnose	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1/3 Tbs.	5	Apply every 7 - 10 days as needed
	Basic Copper Sulfate	Copper Sulfate		NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp ./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	

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PUMPKIN (continued)					
Gummy Stem Blight	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1/3 Tbs.		See Label. Apply every 7 - 10 days as needed.
	Basic Copper Sulfate	Copper Sulfate	3.0 - 4.75 tsp./gal.	NTL	
	Dragon Mancozeb Disease Control	Mancozeb	2.0 - 3.0 tsp ./gal.	5	
	Bonide Mancozeb Plant Fungicide			5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Powdery Mildew	Basic Copper Sulfate	Copper Sulfate		NTL	Apply every 7-10 days as needed.
	Bonide Liquid Copper Fungicide	Copper	4.0 tsp./gal.	up to day of harvest	Do not apply when temperatures exceed 95°F.
	Dragon Copper Fungicide		2.25 - 5.75 oz./gal.	up to day of harvest	
	Bonide Copper Spray or Dust		2.0 - 4.0 tsp ./gal.	NTL	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal	0	
Alternaria Leafspot	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	0	See Label. Apply every 7-10 days as needed.
	Basic Copper Sulfate	Copper Sulfate		NTL	
	Bonide Liquid Copper Fungicide	Copper	2 ¼ tsp.	up to day of harvest	
	Dragon Mancozeb Disease Control	Mancozeb	4 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		3 - 4¾ tsp./gal.	5	
	Dragon Copper Fungicide	Copper	2 - 3 tbsp./gal.	up to day of harvest	
Viruses	No chemical control available.				Reflective mulches, resistant varieties, plant earlier in season, watch for insect vectors (such as aphids).
RADISH					
Alternaria Leafspot	Top Cop with Sulfur	Sulfur			Begin application as soon as disease threatens and repeat at 7-10 day intervals. Use 3 day interval in plant beds. See label.
	Top Cop Tri Basic	Copper			
SPINACH					
Anthracnose & Cercospora Leafspot	Copper Sulfate	Copper Sulfate	1.0 Tbs.	NTL	Begin at first sign of disease and repeat every 7 days.
Downy Mildew & White Rust	Sulfur	Sulfur			
	Copper	Copper	1 ½ Tbs.	NTL	
	Copper Sulfate	Copper Sulfate			
	Hi-Yield Copper Fungicide	Copper Hydroxide	2-4 tsp./gal.	NTL	See Label.
Seed-rot & Damping Off	Hi-Yield Captan Fungicide 50%WP	Captan	1.25 tsp.		Not for use at or immediately before planting. Mix thoroughly in a paper bag or glass jar.

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SQUASH					
Angular Leafspot	Copper Bonide Copper Spray or Dust Basic Copper Sulfate	Copper	See label	NTL	Apply every 7-10 days as needed.
Anthracnose, Downy Mildew, Cercospora, Scab	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	0	See Label.
	Basic Copper Sulfate	Copper Sulfate		NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp ./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Powdery Mildew	Basic Copper Sulfate	Copper Sulfate		NTL	Apply every 7-10 days as needed.
	Bonide Liquid Copper Fungicide	Copper	4.0 tsp./gal.	up to day of harvest	
	Dragon Copper Fungicide		2.25 - 5.75 oz./gal.	up to day of harvest	
	Bonide Copper Spray or Dust		2.0 - 4.0 tsp ./gal.	NTL	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal	0	
Seed-rot & Damping Off	Hi-Yield Captan Fungicide 50%WP	Captan	½ tsp./1 lb. Dry seed		Not for use at or immediately before planting. Mix thoroughly in a paper bag or glass jar.
Viruses	No chemical control				Plant earlier in the season to avoid high insect populations. Row covers provide early-season protection. Select resistant varieties.
TOMATO					
Anthracnose Early Blight Gray Leaf Spot Gray Leaf Mold Late Blight Septoria Leaf Spot	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 Tbs./gal.	NTL	See Label.
	Bonide Copper Spray or Dust	Copper	2¼ - 6 ozs./gal.		
	Dragon Copper Fungicide		4-6 tsp./gal		
	Dragon Mancozeb Disease Control	Mancozeb	2-3 tsp./gal.		
	Bonide Mancozeb Plant Fungicide		1-2 tbsp./ gal.		
Bacterial Spot Bacterial Speck	Basic Copper Sulfate	Copper		NTL	
	Hi-Yield Copper Fungicide		3-5 tsp./gal.	up to day of harvest	
	Bonide Liquid Copper Fungicide		4-6 tsp./gal.	NTL	
	Bonide Copper Spray or Dust		2¼-6 ozs./gal.	up to day of harvest	
	Dragon Copper Fungicide		4-6 tsp./gal.		
Botrytis (Gray Mold)	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1.0 Tbs./gal.	0	See Label.
TURNIPS					
Cercospora	Copper	Copper	See label	NTL	Do not make more than 3 applications per growing season.
Cercosporella	Sulfur	Sulfur		NTL	
Anthracnose Powdery Mildew					

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TURNIPS, MUSTARD, & COLLARDS					
Alternaria Leafspot	Copper	Copper	see label	NTL	
Downy Mildew	Sulfur	Sulfur		NTL	
Powdery Mildew	Wettable Sulfur 95%	Sulfur	2.0 Tbs.	NTL	Begin at first sign of disease. Apply every 7-10 days.
WATERMELON					
Anthracnose	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal	5	Apply every 7 - 10 days as needed.
	Basic Copper Sulfate	Copper Sulfate		NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Bacterial Fruit Blotch	Basic Copper Sulfate	Copper Sulfate		NTL	Studies have shown that ½ rate of copper materials applied weekly is as effective as applying the full rate on a 14 day schedule.
	Hi-Yield Copper Fungicide	Copper	2-4 tsp./gal.	NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3-4¾ tsp./gal.	NTL	
	Dragon Copper Fungicide	Copper	4-6 tsp./gal.	NTL	
Downy Mildew	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	2.0 tsp./gal.	0	See Label.
	Basic Copper Sulfate	Copper Sulfate		NTL	
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Fusarium Wilt	No chemical control.				Plant resistant varieties. Long rotations should be used (do not plant more than once every 5 years).
Gummy Stem Blight	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil		NTL	Apply every 7 - 10 days as needed.
	Basic Copper Sulfate	Copper Sulfate			
	Dragon Mancozeb Disease Control	Mancozeb	3.0 - 4.75 tsp./gal.	5	
	Bonide Mancozeb Plant Fungicide		2.0 - 3.0 tsp./gal.	5	
	Bonide Copper Spray or Dust	Copper	2.25 - 5.75 oz./gal.	NTL	
Powdery Mildew	Bonide Liquid Copper Fungicide	Copper	4 - 6 tsp./gal.	NTL	
	Dragon Copper Fungicide		4 - 6 tsp./gal.	up to day of harvest	
	Bonide Copper Spray or Dust		2¼-5¾ ozs./gal.	NTL	
	Ortho Garden Disease Control (Daconil 2787)	Chlorothalonil	1 tbs./gal.	0	

Always check label for proper rates.
NTL = No time limit

HOME ORCHARD PEST MANAGEMENT GUIDE PREFACE

Elizabeth Little, Extension Homeowner IPM Specialist

Home Orchard Pest Management Guides suggest cultural and chemical control practices that offer a reasonable degree of protection from important fruit diseases and insect pests. Home orchardists should note that producing quality edible fruit is challenging, and that commercial quality, blemish-free fruit is often an unrealistic expectation. During the growing season, weekly monitoring of the crop and pests that may be present is important. Insecticides work best when pest levels are low. Timely application of controls helps minimize damage to fruit. In order to be effective, fungicides need to be applied before appearance of symptoms and / or just prior to and during weather conditions favorable for disease development. In most cases these are cool to mild periods with moderate to high amounts of rainfall. Pruning and removal of diseased and/or dead twigs and branches, raking and removal of leaves and debris, periodically mowing around vines, trees or bushes, and disposing of rotten and/or diseased fruit greatly improves disease and insect control. Collectively these practices are referred to as sanitation. Sanitation, in combination with choosing disease resistant cultivars and the use of chemicals as needed, is usually necessary for acceptable control of fruit diseases and insects. A few fruits can be grown successfully with good sanitation alone.

Pre-mixed home fruit or orchard spray products containing pesticides for both disease and insect control are commonly available. Home orchard pesticides are often less effective than their commercial counterparts. Using the highest label rate, and spraying more often when the weather is wet, will generally improve disease and insect control. For the sake of brevity not all brand names of pesticides are listed. Many may be found by their generic names in the Homeowner Fungicide Guide.

Always consult the label when purchasing or using pesticides. Be sure the label states the material(s) are labeled for use on your crop, whether it be apple, peach, pear, etc. Carefully follow all precautionary statements. They serve to protect you, the environment and those who consume your crop. Label restrictions are legally binding. General considerations for home orchard pesticide applicators are as follows:

- Wear goggles or other eye protection to shield yourself from spray drift;
- Wear long sleeves, long trousers and shoes;
- Remove and launder clothing worn while applying pesticides; launder these clothes separately from family laundry before reusing them;
- Always check for and follow the pre-harvest interval(s) listed on the pesticide container(s), and use the longest one; often, they are listed in days or hours in (parenthesis);
- Many pesticides, especially insecticides, are toxic to honey bees as well as other pollinators, do not spray during bloom unless the product label specifically recommends bloom sprays, and do not apply insecticides if bees are foraging on orchard weeds;
- Assume pesticides to be toxic to fish and other non-target organisms, do not apply to water or where runoff can occur;
- Store pesticides in the original container only.

HOME ORCHARD APPLE DISEASE SPRAY GUIDE

Elizabeth Little, Extension IPM Homeowner Specialist

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Dormant	Black rot, bitter rot and white (Bot) rot survive the winter on dead wood in the tree and on the ground. Spores disseminated to apple buds in December, January, and February may infect at silver tip. Carefully prune to remove all dead wood from the tree. Disinfect pruners with 10% bleach or rubbing alcohol after each cut. Complete sanitation by removing dead wood from the ground. To control bitter rot, it is also necessary to remove all dried fruit (last year's crop) from trees and the ground. After you have done this for 2 years, you may not need the pre-pink, pink, bloom and petal fall captan sprays. Consult your county Extension agent for advice on deleting these preventive sprays if your fruit has very little disease and your sanitation is good. Scab, Brooks spot, Alternaria leaf blotch, and Necrotic leafblotch of `Goldens' overwinter on dead leaves on the ground. Raking and composting or destroying these leaves will control or greatly aid in control of these diseases. Do this as soon after leaf fall as possible.					
Silver tip (when swollen buds first break and develop a silver color)	Black rot	Captan 50WP Thiophanate methyl	3 1/3 Tbs. See label	4 days	day of harvest	Black rot infection occurs around this time. A very important spray for this disease. Good sanitation is also important for control.
Delayed Dormant	Leaf Spot	Lime Sulfur Spray (Hi-Yield)	9.5-13 oz.			Use on Delicious Apples may result in injury. No time limitation.
	Scab	Lime Sulfur Spray (Hi-Yield) Bordeaux Sulfur (Ferti-lome) Thiophanate methyl Captan	2-2.5 oz. 8-9 tbsp 1 tbsp see label 2 tbsp	see label see label see label see label see label		Use on Delicious Apples may result in injury. No time limitation. Plant resistant varieties for best control.
Between Silver tip and Green tip	Fire blight	copper hydroxide (Hi-Yield Copper; others) Streptomycin sulfate (Fertilome)	2 2/3 - 5 1/3 tsp 1 tbsp (makes 2.5 gal)	1 day	pre-green tip only	Kills bacteria which ooze from over wintering cankers. Crop injury may occur if applied later than ½ inch green tip. Important spray after a bad fire blight year. Make application as a full cover spray.
Prepink (when center buds first show pink)	Black rot Brooks spot scab	Captan 50WP Thiophanate methyl	2 Tbs. See label	4 days	day of harvest	
	Cedar apple rust	Immunox	½ oz.	1 day	14 days	Only use Immunox when cedar apple rust is an annual problem.
	Scab Powdery Mildew	Lime Sulfur Spray (Hi-Yield), Copper Sulfate, Wettable Sulfur, Triadimefon - powdery mildew only	2-2.5 oz. 3.2 oz see label 1 tbsp.	1 day see label 1 day see label		Use on Delicious Apples may result in injury. No time limitation.
Pink	black rot Brooks spot scab	captan 50 WP, Thiophanate methyl	2 Tbs.	4 days	day of harvest	Fire blight develops on tender shoots and blooms when temperatures are between 65 and 80°F and it is humid and/ or raining. If these conditions occur or are forecast, apply streptomycin **within 24 hours before rain.** Re-spray before the next rain if bee activity has occurred.
	cedar apple rust	Immunox	½ oz.	1 day	14 days	
	fire blight	streptomycin (Fertilome Fire Blight Spray)	1 tbsp (makes 2.5 gal)	12 hrs	50 days	
	Scab Powdery Mildew	Lime Sulfur Spray (Hi-Yield), Copper Sulfate, Wettable sulfur, Triadimefon - powdery mildew	2-2.5 oz. 3.2 oz. See labels			Use on Delicious Apples may result in injury. No time limitation.

HOME ORCHARD APPLE DISEASE SPRAY GUIDE (continued)

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Bloom	black rot scab	captan 50WP, Thiophanate methyl	2 Tbs. See label	4 days	day of harvest	Conditions conducive to fire blight are listed above. Always spray streptomycin under these conditions.
	Fire blight	streptomycin (bactericide-Fertilome Fire blight Spray)	1 tbsp (makes 2.5 gal)	12 hrs	50 days	Spray within 24 hours before rain. Re-spray before the next rain if bee activity has occurred or every 3-4 days during the bloom period.
	cedar apple rust	Immunox	½ oz.	1 day	14 days	Prune out all fire blight affected twigs 12 inches below the disease-killed tissue. Dip pruners in 10% chlorine bleach or rubbing alcohol and wipe between cuts. Oil pruners after use. Do not use Immunox more than ten times per season.
			see label	1 day	7 days	
		NO INSECTICIDE DURING BLOOM				
Petal fall (when most petals are off) through Covers 1, 2, and 3 (3 sprays after petal fall); spray every 7-10 days	black rot scab	captan 50WP Thiophanate methyl	2 Tbs. See label	4 days	day of harvest	Spray more frequently, when weather is wet.
	cedar apple rust	Immunox	½ oz.	1 day	14 days	Only use Immunox when cedar apple rust is an annual problem. Several available home orchard sprays may be used for control of both diseases and insect pests.
Summer cover sprays (every 14 days until 6 weeks before harvest)	bitter rot sooty blotch fly speck	Captan 50WP Thiophanate methyl	2 Tbs. See label	4 days	day of harvest	Spray promptly at first sign of bitter rot. This disease spreads rapidly if left unchecked. Several available home orchard sprays may be used for control of both disease and insect pests.
Six weeks, 4 weeks and 2 weeks before harvest	bitter rot white rot sooty blotch fly speck	Captan 50WP or sulfur	2 Tbs. see label	4 days 1 day	day of harvest day of harvest	Important disease control sprays, particularly for bitter rot and white rot. Do not use sulfur when temperatures are expected above 90 degrees. Some varieties such MacIntosh, Red Delicious, Staymen, Baldwin, King, Golden Delicious and Jonathan are sensitive to sulfur.

HOME ORCHARD BLUEBERRY DISEASE SPRAY GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Dormant	Phomopsis twig blight	Lime sulfur (Hi-Yield Lime Sulfur Spray)	see label			Apply when bud begins to swell. Avoid excessive nitrogen fertilization. Avoid any drought stress - irrigate plants adequately. Most effective when applied before buds break dormancy.
Before bud break Sanitation, in the form of removing dead berries and debris under the bushes during the winter will reduce disease pressure from Botrytis blight and mummy berry. Compost or destroy debris. Replace with new mulch. Do not place mulch right up against the trunk of the plant. With good sanitation, and little or no history of Botrytis blight and mummy berry, there should be no need for green tip and pre-bloom sprays. If these diseases have been damaging in the past, spray every 7-10 days thru bloom.						
Green tip, from the first green tissue after bud break to first bloom, spray every 7-10 days	Botrytis blight	Captan 50WP	2.5 Tbs.	4 days	day of harvest	
The fungi causing Botrytis blight and mummy berry overwinter in dead berries and debris under the bushes. Remove dead berries, debris, and mulch during the winter and compost or destroy it. Replace with new mulch. Do not place mulch right up against the trunk of the plant. With good sanitation and little or no history of Botrytis blight and mummy berry, there should be no need for green tip and pre-bloom sprays. If these diseases have been damaging in the past, spray every 7-10 days thru bloom.						
10-20% bloom and full bloom	Botrytis blight, Mummy berry, Anthracnose, & various Leaf spots	Captan 50WP	2.5 Tbs.	4 days	day of harvest	DO NOT APPLY INSECTICIDES DURING BLOOM Botrytis causes flower and twig blight. Good air circulation around fruit clusters will help prevent Anthracnose. For leaf spots, apply post bloom to August/Sept at 7 to 10 day intervals. SANITATION is key for mgmt of these diseases (esp. mummy berry).

HOME ORCHARD BRAMBLE SPRAY GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist

Blackberries can often be grown successfully without pesticides, if you practice good sanitation, and have no wild blackberries nearby. Several important fungal and insect pests of blackberry canes overwinter on old canes that were infected the previous season. Cut and remove old canes to the ground after harvest. Do not cut with a rotary mower as pieces will become too small to remove. Cut old fruiting canes from fall-fruiting raspberry cultivars such as 'Heritage' in early spring before new shoots begin to develop. This method produces a single fall crop. Strawberry weevil is not a problem on fall bearing raspberry cultivars such as 'Heritage'. A week to 10 days after cutting, plants should to be fertilized and irrigated to force new growth for next year's crop. Plants infected with orange rust, which can be detected from green tip to early cane growth must be promptly dug up and removed or destroyed. Copper fungicides are toxic to humans and other life forms. Phytotoxicity is a problem with both copper and sulfur products. In addition, copper is a heavy metal which can accumulate in the soil. Copper and sulfur have limited effectiveness and non-chemical methods of disease management should be used before turning to the use of fungicides.

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Delayed dormant (Blackberries only)	Leaf and cane spot	copper hydroxide (Hi-Yield Copper Fungicide)	5 1/3 tsp	1-2 days (see label)	None listed	Apply as delayed dormant spray after training in the spring (Make fall application after harvest.
	Anthracnose	liquid lime sulfur (Polysul, Lilly Miller Dormant Spray, or Bonide Lime Spray)	see label (6 to 12 gal/100gal water)	48 hrs	Dormant/ delayed dormant only	Apply lime-sulfur at delayed dormant, but prior to 3/4-inch shoot stage to avoid leaf burn.
Green tip	Anthracnose, Leaf and cane spot	copper (Dragon Copper Fungicide, Bonide Liquid Copper)	see label	Until dry	None listed	See remarks above this guide. Avoid overhead watering Labeled copper products available under several different brand names.
Orange rust attacks all brambles except for red raspberries. The fungus infects in a systemic fashion, once plants are infected they remain so for life. Infected plants are stunted and produce very little fruit. They can be identified in the early spring. Shortly after leafing out, the lower surface of infected leaves develops orange pustules that gives the disease its name. The timely removal of infected plants is most important to control this disease. Inspect plants in early spring and try to identify the pustules before the orange spores are produced. Once spores are released, they cause new infections that may not show up until the following spring. Dig up, remove and dispose of or destroy these plants. Nearby wild brambles should also be destroyed.						
When buds appear and new canes are 8-12" high	Anthracnose, Leaf and cane spot	copper (Dragon Copper Fungicide, Bonide Liquid Copper)	see label	Until dry	None listed	
		or Liquid lime sulfur (Hi-Yield Lime Sulfur Spray)	4 tsp		None listed	Apply before blossoms have opened.
Pre-bloom	Anthracnose, Leaf and cane spot	copper (Dragon Copper Fungicide, Bonide Liquid Copper)	see label	Until dry	None listed	Repeat at 10-14 day intervals as necessary
Bloom	Botrytis Flower Blight Powdery Mildew Botrytis Fruit Rot	copper (Bonide Liq. Copper)	0.5 to 2.0 fl. oz	see label	None listed	Apply copper at the start of flowering and continue every 7 to 10 days until harvest. DO NOT SPRAY INSECTICIDE DURING BLOOM.

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Rosette or double blossom (Cercosporella rubi) occurs on both blackberries and raspberries, but is most damaging to blackberries. Symptoms are unusual and markedly change the appearance of the plant. In the spring, infected buds from the previous year produce numerous leafy sprouts. This proliferation of shoots is referred to as a witch's broom. Several of these witch's brooms may occur on one cane. As flower buds open, petals are pinkish in color, wrinkled and twisted. Berries do not develop from infected blossoms, uninfected parts of the same plant produce smaller, poorer quality fruit. Sanitation to prevent this disease is similar to that of orange rust. Wild brambles should be removed from the immediate area. They can serve as sources of inoculum. Remove and destroy old fruited canes after harvest. Infected blossom clusters should be removed before they open. Where this disease is especially severe on trailing blackberries, cut off plants at the ground after fruiting. This extreme practice only works well where the growing season is long. For other brambles, cut all canes back to 12 inches immediately after harvest. Fertilize and irrigate plants to force new growth before winter.						
After old canes have been removed	Anthracnose, leaf and cane spot	copper (Dragon Copper Fungicide, Bonide Liquid Copper)	see label	Until dry	none listed	See introductory section. Labeled copper products available under several different brand names.
	Orange rust	*				Avoid overhead watering.

*Carbamate WDG is no longer registered by the U.S. Environmental Protection Agency for blackberries or raspberries. There are no other labeled chemicals available to control orange rust. If any become available, we will notify your county agent.

HOME ORCHARD BUNCH GRAPE DISEASE SPRAY GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist
Dan L. Horton, Extension Entomologist

TIME OF APPLICATION	TO CONTROL	MATERIALS	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Dormant season sanitation helps reduce disease pressure. Fungal rot organism of grapes overwinter on old vines and dried fruit on the vines and ground. Vines should be pruned back to the main stem each winter, leaving only 1 vine of the previous year's growth for each wire. Fruit and leaves on the ground should be raked and composted or destroyed.						
Dormant - mid-winter	Anthracnose	liquid lime sulfur	see label	see label	see label	Do not apply lime sulfur and superior oil within 30 days of each other.
	Powdery Mildew	Hi-Yield Improved Lime Sulfur Spray	2.5-6.5 fl. oz.			Objective of lime sulfur spray at this time is to reduce fungal inoculum on canes.
Pre-bloom beginning with 1-2 inches green, apply every 7 days until bloom	Black rot Powdery mildew, downy mildew, anthracnose	mancozeb or	see label	1 day	see label	Use mancozeb if downy mildew is a problem
		Immunox	2 oz.	1 day	14 days	Use Immunox if anthracnose is a problem.
						Do not make more than 6 applications of Immunox (@ 2 oz./gal) per season.
Bloom - 10% bloom and full bloom	Black rot, Powdery mildew	Captan 50WP or	2 Tbs	4 days	day of harvest	DO NOT APPLY INSECTICIDE DURING BLOOM.
		mancozeb or	see label	1 day	see label	Do not apply mancozeb within 66 days of harvest.
		Immunox	2 oz.	1 day	14 days	
DO NOT APPLY INSECTICIDES OF ANY KIND DURING BLOOM, OR INJURY TO BEES AND OTHER POLLINATORS MAY OCCUR.						
Cap fall and 1st Cover (10 days after cap fall)	Black rot, powdery mildew	Captan 50WP or	2 Tbs	4 days	day of harvest	
		Immunox	2 oz.	1 day	14 days	
	downy mildew	as needed copper hydroxide (Hi-Yield Copper Fungicide and others)	see label	1 day	see label	Foliage injury may occur on copper sensitive varieties such as Concord, Delaware, Niagara and Rosettes. Test for sensitivity.
Summer cover sprays every 14 days until 14 days before harvest	black rot powdery mildew	Captan 50WP or	2 Tbs	4 days	day of harvest	
		Immunox	2 oz.	1 day	14 days	Do not make more than 6 applications of Immunox (@ 2 oz./gal) per season.
Preharvest (7 days before harvest)	Black rot	Captan 50WP	2 Tbs	4 days	day of harvest	

HOME ORCHARD MUSCADINE GRAPE DISEASE SPRAY GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist

Muscadine grapes may yield satisfactorily without the aid of pesticides. It is advisable to watch and treat as-needed for angular leaf spot and for insect pests. Angular leaf spot is most damaging in July or early August. Uncontrolled angular leaf spot often can result in almost complete defoliation which terminates further fruit development. When wet weather favors disease cover sprays from bloom to harvest will sometimes be needed to prevent severe losses from ripe rot, Macrophoma rot and bitter rot. Dormant season sanitation will reduce disease pressure. Most diseases overwinter on dead leaves and fruit on the vine and the ground. Removing this material usually will benefit or give sufficient disease control.

TIME OF APPLICATION	TO CONTROL	CHEMICAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
DORMANT						
Dormant season sanitation helps reduce disease pressure. Fungal rot organism of grapes overwinter on old vines and dried fruit on the vines and ground. Vines should be pruned back to the main stem each winter, leaving only 1 vine of the previous year's growth for each wire. Fruit and leaves on the ground should be raked and composted or destroyed.						
PRE-BLOOM						
Every 14 days from Bud Break until Bloom	Black Rot Bitter Rot Angular leaf spot Powdery mildew	mancozeb or captan 50WP or Immunox (myclobutanil) or ferbam or Copper Hydroxide (Hi-Yield)	2 Tbs 3 Tbs 2 oz see label 1 3/4 tsp	1 day 4 days 1 day see label until dry	4 days day of harvest 14 days 7 days not listed	BLACK ROT susceptible varieties should be sprayed with fungicide every 14 days from the start of new growth until after bloom. This disease develops on the fruit during and just after bloom. Where ripe rot is a problem, use Captan 50WP. Do not make more than 6 applications of Immunox (@ 2 oz./gal) per season. **DO NOT SPRAY INSECTICIDE DURING BLOOM.**
Bloom	Black Rot Bitter Rot Angular leaf spot Powdery mildew	mancozeb or captan 50WP or Immunox (myclobutanil) or ferbam	2 Tbs 3 Tbs 2 oz see label	1 day 4 days 1 day see label	4 days day of harvest 14 days 7 days	BLACK ROT susceptible varieties should be sprayed with fungicide every 14 days from the start of new growth until after bloom. This disease develops on the fruit during and just after bloom. Where ripe rot is a problem, use Captan 50WP. Do not make more than 6 applications of Immunox (@ 2 oz./gal) per season.
DO NOT APPLY INSECTICIDES OF ANY SORT DURING BLOOM OR INJURY TO BEES AND OTHER POLLINATORS MAY OCCUR.						
COVER SPRAYS						
Cap fall, First Cover and every 14 days from second cover until 6 to 8 weeks before harvest	Black rot, ripe rot Macrophoma rot	Captan 50WP or Immunox	3 tbs 2 oz	4 days 1 day	0 days 14 days	Captan may cause mild phytotoxicity to fruit if applied when conditions are cool and wet.
PREHARVEST SPRAYS						
Every 10 to 14 days during the last 6-8 weeks before harvest (Start July 1 on the Coastal Plain and July 10-14 in Middle Georgia)	Bitter Rot Macrophoma Rot Ripe Rot Angular Leaf spot	Captan 50WP or fruit tree spray	3 Tbs see label	4 days see label	day of harvest see label	Captan may be applied up to day of harvest. Most home fruit sprays require a 14 day preharvest interval for grapes. Check the individual product label.

HOME ORCHARD PEACH, NECTARINE AND PLUM DISEASE SPRAY GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Dormant sprays - Leaf drop until early bud swell	Bacterial spot, Leaf curl	copper hydroxide (Hi-Yield Copper Fungicide, Polysul Summer and Dormant Spray)	2 2/3 tsp	Until dry	21 days	Bacterial spot - chemical control is difficult - dormant sprays - are somewhat effective against fall infections. Apply copper hydroxide fungicide when leaves just begin to shed. Do not apply copper hydroxide with oil. Leaf curl - once symptoms become visible, control is impossible.
	Leaf curl Shot hole Scab	Ortho Garden Disease Control (Daconil 2787)	see label	see label	Do not apply after petal fall	Preventative leaf curl sprays at this time are for cooler areas of the state where leaf curl occurs (primarily upper piedmont and mountains).
		or Bordeaux mixture	3/4 Tbs	2 days	Dormant spray only	
		or Lime Sulfur Spray (Hi-Yield &others)	12.5 - 15 gal	see label	Dormant spray only	**Liquid lime sulfur can be combined with one of the oil sprays listed below. Ortho Daconil 2787 and copper hydroxide cannot.**
		or Copper Hydroxide (Hi-Yield & others)	2 2/3 - 5 1/3 tsp	Until dry	Apply at leaf fall	If leaf curl has been severe, a fungicide application should also be made after leaf drop in the fall. **Do not apply oil or oil plus fungicide after buds break.**
Pink to 5% bloom	Bacterial spot	copper hydroxide (Hi-Yield & others)	2 2/3 tsp	2 days	21 days	Cooper rate reductions are tied to crop development, rates must be reduced as the season progresses. Note rates at various stages.
	Brown Rot Shot Hole Scab Jacket rot	copper hydroxide (Hi-Yield & others)	2 2/3 - 4 tsp	until dry	see label	Full cover spray at pink bud.
		or Lime Sulfur	4 tsp	see label	see label	apply 3 to 5 times weekly before harvest
		or Captan	2 tsp			repeat at 7 to 10 day intervals as needed to maintain cover
Bloom	Blossom blight (early season phase of brown rot - blossoms turn brown and die) Scab	Ortho Daconil 2787	3/4 tsp	2 days	Do not apply after shuck split	This a very important spray for suppression of pre-harvest brown rot. Make this preventative application every year.
		or captan 50WP	2 Tbs	4 days	day of harvest	
		or liquid lime sulfur (Hi-Yield)	see label	see label	Do not apply after petal fall	
		or Immunox	½ oz	1 day	day of harvest	Do not make more than 6 applications of Immunox (@ 2 oz./gal) per season.

DO NOT USE INSECTICIDE DURING BLOOM.

HOME ORCHARD PEACH, NECTARINE AND PLUM DISEASE SPRAY GUIDE (continued)

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Petal fall (when most of the petals have fallen) through Cover Sprays 1, 2 and 3 apply every 7 to 10 days	Bacterial spot	copper hydroxide (Hi-Yield Cooper Fungicide)	see label	2 days	21 days	Use caution if coppers are used post-bloom. The recommended rate reductions lessen, but do not eliminate phytotoxicity.
	Brown rot Scab	Ortho Daconil 2787 or captan 50WP or sulfur or Immunox	3/4 tsp 2 Tbs see label ½ oz	2 days 4 days 1 day 1 day	shuck split only day of harvest day of harvest day of harvest	Avoid use of sulfur when temperatures are above 90/F.
Summer cover sprays (every 14-21 days until mid-June)	Scab Brown rot	Captan 50WP or sulfur or Immunox	2 Tbs see label ½ oz	4 days 1 day 1 day	day of harvest day of harvest day of harvest	Do not use Ortho Home Orchard Spray **within 21 days of harvest.**
	Powdery Mildew	Lime Sulfur Spray (Hi-Yield)	0.5 fl. oz.			
Pre-harvest Disease Spray - 2 weeks and 1 week before harvest for each variety	Brown rot	Captan 50WP or sulfur or Lime Sulfur Spray (Hi-Yield)	2 Tbs see label 4 tsps.	4 days 1 day	day of harvest day of harvest	Avoid use of sulfur when temperatures are above 90/F. Apply 3 to 5 times at weekly intervals before harvest.

HOME ORCHARD PEAR DISEASE SPRAY GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Dormant - before buds begin to swell	fire blight	Bordeaux mixture	8 Tbs. copper sulfate plus 8 Tbs. hydrated lime	see label	dormant spray only	**DO NOT APPLY AFTER GREEN IS SHOWING.** Several leaf spot fungi overwinter on cankers on diseased or dead twigs and on leaves on the ground. Pruning and removing diseased wood and raking, composting or destroying these leaves each fall will aid in disease control.
Green cluster bud	Scab	or if needed Ortho Home Orchard Spray or Hi-Yield Improved Lime Sulfur Spray	5 Tbs 4-6 tsp	12 hrs	7 days	**If scab has been a problem use Ortho Home Orchard Spray** (same as white bud) instead of malathion. Scab spores are at their highest number just after this spray.
White bud (Popcorn)	fire blight	streptomycin sulfate or copper hydroxide (Hi-Yield Copper Fungicide and others)	100 parts per million - see table below see label	12 hrs 1 day	30 days see label	Apply streptomycin just before the earliest blooms open, and every 3-4 days thru petal fall for fireblight. Fire blight starts only when the trees are blooming, temperatures are between 65 and 80°F, and it is very humid or raining. If these conditions occur, streptomycin needs to be applied within 24 hours before the rain. Do not re-apply until there has been a period of bee activity and another rain occurs. Prune out all fire blight affected twigs 12 inches below the disease-killed tissue. Dip pruners in 10% chlorine bleach or rubbing alcohol between cuts. Oil pruners after use.
Bloom - every 5 days	Fire blight	streptomycin sulfate (Fertilome Fire blight) or copper hydroxide (Hi-Yield Copper Fungicide and others)	100 parts per million - see table below. see label	12 hrs 1 day	30 days see label	DO NOT APPLY INSECTICIDE **DURING BLOOM.** Apply streptomycin every 5 -7 days when weather is favorable for fire blight (see above).
Petal fall - when most of the petals are off and again 10-14 days after petal fall	Scab fungal leaf spots	Ortho Home Orchard Spray	5 Tbs.	12 hrs	7 days	Avoid use of sulfur when temperatures are above 90/F. D'Anjou pears are sensitive to sulfur.
When first leaves have completely unfolded	Scab bitter rot fungal leaf spots	Ortho Home Orchard Spray	5 Tbs.	12 hrs	7 days	Ortho Home Orchard Spray contains captan (a fungicide) and malathion and methoxychlor (insecticides).
Preharvest 28 days and 14 days pre-harvest	Scab Bitter rot	Ortho Home Orchard Spray	5 Tbs	12 hrs	7 days	

ANTIBIOTIC FORMULATIONS FOR A 100 PPM SOLUTION

MATERIAL	TSP./GAL.	OZS./100 GALS.
Agrimycin 17, 21.3% streptomycin sulfate	3/4 tsp.	8 ozs.
Agristrep, 21.2% streptomycin sulfate	3/4 tsp.	8 ozs.
Ortho Streptomycin, 21% streptomycin sulfate	3/4 tsp.	8 ozs.

HOMEOWNER STRAWBERRY DISEASE CONTROL

Elizabeth Little, Extension Homeowner IPM Specialist

TIME OF APPLICATION	TO CONTROL	MATERIAL	AMT/GAL	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
Dormant season sanitation will reduce disease pressure most years. Strawberry leaf spots and Botrytis blight overwinter on old leaves and debris on the bed. Clipping old leaves, raking, and composting or destroying greatly aids in disease control.						
New growth, begin as soon as new growth starts, and every 10-14 days until just before bloom.	Leaf spots Anthracnose Botrytis blight (Gray mold)	Captan 50WP	2 Tbs	1 day	day of harvest	During periods of frequent rainfall, sprays at 7-10 day intervals may be necessary. Do not use more than 48 lbs of Captan per acre per crop.
10% bloom	Leaf spots, Botrytis blight and other fruit rots	Captan 50WP	2 Tbs	1 day	day of harvest	DO NOT APPLY INSECTICIDES DURING BLOOM. Critical time for Botrytis (Gray mold) control begins here.
Full bloom	Leaf spots, Botrytis blight and other fruit rots	Captan 50WP	2 Tbs	1 day	day of harvest	DO NOT APPLY INSECTICIDES DURING BLOOM.
Every 10-14 days from bloom until harvest.	Leaf spots, Botrytis blight and other fruit rots	Captan 50WP	2 Tbs	1 day	day of harvest	Under severe gray mold conditions, apply immediately after each picking through harvest. During periods of frequent rainfall, sprays at 7-10 day intervals or less may be necessary.

HOMEOWNER ORNAMENTAL AND TREE DISEASE CONTROL

General Fungicide Guidelines

Elizabeth Little, Extension Homeowner IPM Specialist

Prevention in the home garden and landscape is the key to reducing diseases in and around your yard. Several preventive practices can be utilized for disease control 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 allows one to grow plants that are appropriate for each individual yard, 4) proper plant care in the home garden, including fertilization, irrigation, and sanitation (removing dead and diseased plant parts that could harbor pathogens), 5) growing disease-free plants, and 6) regular scouting in the yard for potential disease problems and pests. The application of pesticides should be the last option for the homeowner. It is best to properly identify the pathogen before applying/spraying a pesticide. REMEMBER TO ALWAYS READ AND FOLLOW THE LABEL CAREFULLY, if you choose to apply a pesticide.

This guide has two sections: PART A is a list of commonly occurring plant pathogens/diseases a nd the materials that can be used to control them (includes active ingredient/common name and trade 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. Fungicides labeled for use are listed by active ingredient, followed by the manufacturer/ trade name in PART A. 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 retails centers and on-line at particular locations.

**Keep in mind this is not an all-inclusive list of plants or products. County your local county 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 THE MATERIALS USED TO CONTROL THEM.

DISEASE	ACTIVE INGREDIENT (COMMON NAME)	CONTACT OR SYSTEMIC	TRADE NAME
OOMYCETES			
Phytophthora root/crown rot	Fosetyl-Al	Systemic	Monterey Aliete
Pythium root/crown rot	Phosphorous Acid	Systemic	Monterey AGRI-FOS
Downy Mildew	Fosetyl-Al	Systemic	Monterey Aliete
Phytophthora blight/dieback			
	Phosphorous Acid	Systemic	Monterey AGRI-FOS
	Copper hydroxide	Contact	Hi-Yield Copper Fungicide Kocide 101
	Copper Salts	Contact	Monterey LIQUI-COP Bonide Liquid Copper Fungicide Dragon Copper Fungicide
	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bonide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Dragon Daconil 2787 Monterey Fruit Tree, Vegetable, & Ornamental Fungicide
FUNGAL			
Armillaria root/stem rot	Thiophanate-methyl	Systemic	Ferti-lome Halt Systemic Fungicide
Black root rot			Scotts Lawn Fungus Control
Cylindrocladium root rot			Green Light Systemic Fungicide
Fusarium root/stem rot			Dragon Systemic Fungicide 3336WP
Ganoderma root rot			
Rhizoctonia root/stem rot	PCNB	Contact	Hi-Yield Turf & Ornamental Fungicide
Sclerotinia root rot			Terraclor (several manufacturers)
Southern blight			
Verticillium Wilt			

HOMEOWNER ORNAMENTAL AND TREE DISEASE CONTROL (continued)

DISEASE	ACTIVE INGREDIENT (COMMON NAME)	CONTACT OR SYSTEMIC	TRADE NAME
Botrytis blight	Thiophanate-methyl	Systemic	Ferti-lome Halt Systemic Fungicide Scotts Lawn Fungus Control Green Light Systemic Fungicide Dragon Systemic Fungicide 3336WP
	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bonide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Dragon Daconil 2787 Monterey Fruit Tree, Vegetable, and Ornamental Fungicide
Diplodia tip blight Kabatina dieback Phomopsis dieback Phomopsis needle blight Sclerotinia stem rot Tip blight	Thiophanate-methyl	Systemic	Ferti-lome Halt Systemic Fungicide Scotts Lawn Fungus Control Green Light Systemic Fungicide Dragon Systemic Fungicide 3336WP
Powdery mildew	Sulfur	Contact	Safer Garden Fungicide Monterey Sulfur 90W Bonide Sulfur Plant Fungicide Hi-Yield Wettable Dusting Sulfur Dragon Wettable or Dusting Garden Sulfur Top-Cop w/ Sulfur
	Neem oil	Contact	Green Light Powdery Mildew RTU Ferti-lome Triple Action RTU
	Jojoba oil	Contact	Monterey E-Rase RTU
	Myclobutanil	Systemic	Ferti-lome F-stop Lawn Fungicide Green Light Fung-Away Systemic Granules Spectracide Immunox 3-in-1 Spectracide Immunox Fungicide Spectracide Lawn Disease Spray Spectracide Lawn Disease Control Granules Spectracide Multi-purpose Fungicide Spectracide Immunox Plus Insect and Disease Control
	Triforine (see label for plant list)	Systemic	Ortho Rose Pride-Rose and Shrub Disease Control Ortho Orthenex Insect and Disease Control
	Potassium bicarbonate soluble powder	Contact	Monterey Bi-Carb Old Fashioned Fungicide
	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bon- ide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Dragon Daconil 2787 Monterey Fruit Tree, Vegetable, & Ornamental Fungicide

HOMEOWNER ORNAMENTAL AND TREE DISEASE CONTROL (continued)

DISEASE	ACTIVE INGREDIENT (COMMON NAME)	CONTACT OR SYSTEMIC	TRADE NAME
Rust	Myclobutanil	Systemic	Ferti-lome F-stop Lawn Fungicide Green Light Fung-Away Systemic Granules Spectracide Immunox 3-in-1 Spectracide Immunox Fungicide Spectracide Lawn Disease Spray Spectracide Lawn Disease Control Granules Spectracide Multi-purpose Fungicide Spectracide Immunox Plus Insect and Disease Control
	Triadimefon	Systemic	Green Light Fung-Away Fungicide Green Light Fung-Away Systemic Lawn Spray Hi-Yield Lawn Fungicide Granules
	Triforine (asters, carnations, & roses)	Systemic	Ortho Rose Pride-Rose and Shrub Disease Control Ortho Orthenex Insect and Disease Control
	Tebucanazole	Systemic	Bayer Disease Control
	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bonide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Dragon Daconil 2787 Monterey Fruit Tree, Vegetable, and Ornamental Fungicide
Leaf spots (Alternaria, Anthracnose, Cercospora, Cylindrocladium, Entomosporium,	Propiconazole Ortho Lawn Disease Control Ferti-lome Liquid Systemic Fungicide	Systemic	Bonide Infuse
Gnomonia ,Heterosporium, Macrophoma, Mycosphaerella, Phyllosticta, Purple-eye, Septoria, Zonate) Black spot (ROSE) Curvularia leaf blight Leaf streak (daylily)	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bonide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Monterey Fruit Tree, Vegetable, and Ornamental Fungicide Dragon Daconil 2787
Scab Spot anthracnose Volutella blight Web blight	Mancozeb	Contact	Dragon Mancozeb Disease Control Bonide Mancozeb Flowable
	Maneb	Contact	Hi-Yield Maneb Garden Fungicide
	Captan	Contact	Bonide Captan Dragon Captan Wettable Powder
	Copper hydroxide	Contact	Hi-Yield Copper Fungicide Kocide 101 Nu-Cop 50DF
	Copper salts	Contact	Monterey LIQUI-COP Bonide Liquid Copper Fungicide Dragon Copper Fungicide
	Thiophanate-methyl	Systemic	Ferti-lome Halt Systemic Fungicide Scotts Lawn Fungus Control Green Light Systemic Fungicide Dragon Systemic Fungicide 3336WP
	Triforine (Black spot on roses)	Systemic	Ortho Rose Pride-Rose and Shrub Disease Control Ortho Orthenex Insect and Disease Control

HOMEOWNER ORNAMENTAL AND TREE DISEASE CONTROL (continued)

DISEASE	ACTIVE INGREDIENT (COMMON NAME)	CONTACT OR SYSTEMIC	TRADE NAME
Leaf/flower gall	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bon- ide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Monterey Fruit Tree, Vegetable, and Ornamental Fungicide Dragon Daconil 2787
	Mancozeb	Contact	Dragon Mancozeb Disease Control Bonide Mancozeb Flowable
Flower/petal blight	Myclobutanil	Systemic	Ferti-lome F-stop Lawn Fungicide Green Light Fung-Away Systemic Granules Spectracide Immunox 3-in-1 Spectracide Immunox Fungicide Spectracide Lawn Disease Spray Spectracide Lawn Disease Control Granules Spectracide Multi-purpose Fungicide Spectracide Immunox Plus Insect and Disease Control
	Chlorothalonil (Daconil)	Contact	Ferti-lome Broad Spectrum Liq. Fungicide Hi-Yield Daconil Garden Tech Fungicide Disease Control Bon- ide Fung-Onil Multi-Purpose Fungicide Ortho Garden Disease Control Monterey Fruit Tree, Vegetable, and Ornamental Fungicide Dragon Daconil 2787
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 one 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	Copper	Contact	Bonide Copper Spray or Dust
	Copper hydroxide	Contact	Hi-Yield Copper Fungicide Kocide 101 Nu-Cop 50DF
	Copper Salts	Contact	Monterey LIQUI-COP Bonide Liquid Copper Fungicide Dragon Copper Fungicide
	Copper oxinate	Contact	Concern Copper Soap
	Fosetyl-Al	Systemic	Monterey Aliete
	Streptomycin sulfate	Contact	Bonide Fire Blight Spray Ferti-lome Fire Blight Spray
Crown gall	Important to purchase healthy plants. Biological controls are available. Check with County Agents. Can use copper compounds but may be phytotoxic.		
NEMATODE	Chitin		Hi-Yield Nem-A-Cide Clandosan
	This product is soil amendment that increases the growth of naturally occurring micro-organisms which feed on nematodes (nematode bodies are composed of chitin).		
VIRAL	No chemical controls for viral diseases.		

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.

ORNAMENTAL PLANTS (HERBACEOUS & WOODY) and TREES & THEIR DISEASES	
PLANT - Scientific name (Common Name)	**DISEASES**
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
Aegopodium (Goutweed)	Leaf spot
Aesculus (Horse Chestnut, Buckeye)	Guignardia blotch
Agave (Century plant)	Crown rot, Anthracnose, Leaf spot
geratum (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
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

PLANT - Scientific name (Common Name)	DISEASES
Aucuba	Anthracnose, Botryosphaeria dieback, leaf spots, Phomopsis dieback, ring nematode
Bamboo	Pythium root rot
Bedding plants	Damping off (Pythium)
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
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 (Cannalily)	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
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

HOMEOWNER ORNAMENTAL AND TREE DISEASE CONTROL (continued)

PLANT - Scientific name (Common Name)	DISEASES
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
Cornus (Dogwood)	Anthracnose, 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 bligh
Cosmos (Mexican aster)	Botrytis blight, Phomopsis stem canker, powdery mildew, white smut
Cotinus (Smoke tree)	Anthracnose, 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
Dahlia	Crown gall, powdery mildew, tuber rot (fungal-Fusarium and Botrytis), root rot, viral disease (mosaic)
Daphne	Anthracnose, 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, pozdery 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
Echinacea (Coneflower)	Aster yellows, foliar nematodes, Pythium root rot, viral disease
Eichhornia (Water hyacinths)	Leaf spots
Elaeagnus (Autumn Olive)	Phytophthora root rot
Epiphyllum (Cereus)	Oedema (nutritional)

PLANT - Scientific name (Common Name)	DISEASES
Epipremnum (Pothos)	Phytophthora stem rot
Erica (Heather)	Phytophthora root rot
Eucalyptus	Anthracnose, Botryosphaeria dieback, crown gall, Fusarium canker, Phomopsis dieback, Phytophthora root rot, powdery mildew, Pythium root rot
Euonymus	Powdery mildew
Euphorbia (Spurge)	Anthracnose, 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
Fagus (Beech)	Anthracnose, Botryosphaeria canker, Hypoxylon canker, viral disease
Fatsia	Leaf Spot
Fatshedra (Bush ivy)	Botrytis blight, Fusarium root/stem rot, Phomopsis blight, Rhizoctonia root rot, Powdery mildew, scab
Ficus (Fig)	Anthracnose, Phytophthora root rot
Ficus benjamina (Weeping fig)	Anthracnose, Phomopsis gall
Forsythia	Botryosphaeria dieback, crown gall, Phomopsis gall, Phytophthora root rot, ringer nematodes, Sclerotinia twig blight, web blight
Fraxinus (Ash)	Anthracnose, ash yellows, Botryosphaeria canker, rust
Gaillardia (Blanket flower)	Pythium root rot, White smut
Galium (Sweet woodruff)	Rhizoctonia stem/root rot, Southern blight
Gardenia	Anthracnose
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
Hamamelis (Witchhazel)	Botryosphaeria dieback, leaf spot, powdery mildew
Hedera helix (English ivy)	Anthracnose, Bacterial leaf spot, oedema, Phyllosticta leaf spot, Phytophthora root rot, Pythium root rot, Rhizoctonia root ro
Helianthemum (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)	Anthracnose, rust, leaf streak, Southern blight

PLANT - Scientific name (Common Name)	DISEASES
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	Anthracnose, Botrytis blight, leaf spot, root rot, soft rot, Southern blight, virus X
Hyacinth (Hyacinthus)	bacterial soft rot, root rot, gray mold
Hydrangea	Anthracnose, 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
Iberis (Candytuft)	Anthracnose, Pythium root rot
Ilex (Holly)	Anthracnose, 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 (Inkberry)	Black root rot, Phytophthora root rot
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)
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
Kalmia (Mountain laurel)	Botryosphaeria dieback, Cercospora leaf spot
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)
Limomium (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 ro
Lonicera (Honeysuckle)	Botryosphaeria dieback, Botrytis blight, Herpobasidium leaf blight, powdery mildew, witches' broom

PLANT - Scientific name (Common Name)	DISEASES
Lupinus (Lupine)	Anthracnose, brown spot, Pythium root rot
Lysimachia (Loosestrife)	Rhizoctonia root/stem rot, Southern blight
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)
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
Ocimum basilicum (Basil)	Alternaria leaf spot, Fusarium crown rot
Ophiopogon (Mondo grass)	Anthracnose
Oxalis (Wood sorrel)	Rust; leaf spots; root knot nematode
Oxalis (Wood sorrel)	Rust; leaf spots; root knot nematode
Oxydendrum arboreum (Sourwood)	Leaf spots
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 spots
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

PLANT - Scientific name (Common Name)	DISEASES
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, Phacidiopycnis 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
Primula (Primrose)	Leaf spots, 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
Quercus (Oak)	Anthracnose, Armillaria root rot, bacterial scorch, bacterial wetwood, Botryosphaeria canker, Cylindrocladium root rot, Discula anthracnose, Hypoxylon canker, leaf blister, Phomopsis dieback, powdery mildew, rust, smooth patch, spot anthracnose, Tubakia leaf spot
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
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

HOMEOWNER ORNAMENTAL AND TREE DISEASE CONTROL (continued)

PLANT - Scientific name (Common Name)	DISEASES
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
Setcreasia (Purple heart)	Leaf spot
Solidago (Goldenrod)	Rust; powdery mildew; leaf spot
Spiraea	Leaf spot
Styrax (Silverbell)	Leaf spots
Syringa (Lilac)	Anthracnose, bacterial blight, Botrytis blight, Cercospora leaf spot, Phytophthora root rot, powdery mildew
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
Ulmus (Elm)	Bacterial wetwood, bacterial leaf scorch, Botryosphaeria canker, Cytospora canker, Dutch elm disease, Verticillium wilt
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
Weigala	Phytophthora root rot, Pythium root rot
Wisteria	Botryosphaeria dieback
Yucca	Bacterial soft rot, Mycosphaerella leaf spot
Zinnia	Alternaria blight, bacterial leaf spot, Botrytis stem canker, powder mildew, Pythium root rot

HOMEOWNER FUNGICIDE GUIDE

Elizabeth Little, Extension Homeowner IPM Specialist

The following is a supplemental guide to fungicides that are readily available to homeowners. This guide is not intended to take the place of the individual product labels which are the best resource concerning the use of any pesticide. Most but likely not all of the current brand names are listed here. Follow label recommendations for application rates, methods and safety precautions when using all pesticides.

COMMON NAME (i.e. Active Ingredient)	BRAND NAME(S)	DISEASES CONTROLLED	COMMENTS
Aluminum tris	Monterey Aliette	Downy mildew on roses, Pythium and Phytophthora in ornamentals, bedding plants, conifers and turf, Fire blight on pear, pyracantha, and hawthorne.	Apply as spray or drench.
Bordeaux mixture (copper sulfate + hydrated lime)	Hi-Yield Bordeaux Mix Fungicide and others	Various diseases of fruits, vegetables and ornamentals including leaf curl on peaches and bitter rot, black rot and scab on apples. Labeled for many plants including apples, boxwoods, chrysanthemums, dahlias, iris, lilies, and tulips.	Protectant fungicide. This is a contact fungicide. Some sensitive plants require diluting the product to one half strength (depending on the product used – see label) to avoid phytotoxicity. These include geraniums, ivy, pansy, celery, strawberry, azaleas, dogwood, juniper, and rhododendron. Can cause phytotoxicity when applied to young, tender leaves of peach, plum, rose and apple. Should not be used during cool, wet weather as it can cause spotting or burning of leaves.
Captan	Ortho Home Orchard Spray, Dragon Fruit Tree Spray, Ferti-lome Fruit Tree Spray, Bonide Captan 50W, Bonide Rose Insect & Disease Control, and Hi-Yield Captan 50% WP	Good general fruit fungicide used for bitter rot, black rot, *Botryosphaeria* rot, flyspeck, sooty blotch, frog-eye leaf spot and scab control on apples, brown rot and scab on peaches and plums, Botrytis rot on strawberries, downy mildew, and black rot of grape. Also used for black spot of rose, powdery mildew on tuberous begonias, rust and leaf spot on carnations, Botrytis flower blight on chrysanthemums, petal blight of camellias, rot and/or damping off of cuttings (azaleas, carnations, chrysanthemums) and bulbs (gladiolus, tuberous begonias). General soil drench treatment for grass seedlings, cuttings and flower beds for damping off and root rot (*Rhizoctonia* spp.). Some products include grass (non- pasture/ grazing) label for brown patch, leaf spot, seedling blights and melting out (*Helminthosporium*) on St. Augustinegrass..	Broad spectrum protectant fungicide. This is a contact fungicide. Label indicates control of difficult to control diseases (i.e. root rots, petal blight of camellias) product actually gives suppression only. Does not control cedar apple rust. Combination fruit spray home orchard products also contain insecticides (usually malathion and methoxychlor) for control of home orchard insect pests. Do not combine with lime, lime-sulfur or Bordeaux mixture as fungicidal activity will be reduced. Do not apply Captan in combination with oil or near the time of oil sprays.
Chitin (organic)	Hi-Yield Nem-A-Cide	Nematodes	This is a soil amendment that increases growth of beneficial microorganisms that feed on chitin (nematode eggs and nematodes contain chitin). This is considered an ORGANIC product. A single application/year is usually sufficient.

COMMON NAME (i.e. Active Ingredient)	BRAND NAME(S)	DISEASES CONTROLLED	COMMENTS
Chlorothalonil	Ortho Garden Disease Control (Daconil 2787), Hi- Yield Daconil Lawn Vegetable Flower Fungicide, Fertilome Lawn & Garden fungicide, Fertilome Broad Spectrum Liquid Fungicide, and Bonide Fung-onil	Many common fungal diseases including anthracnose, downy mildew, gray mold (*Botrytis*), powdery mildew, early blight and late blight on man y vegetables including tomatoes. Downy mildew, anthracnose, fungal leaf spots, shot-hole, rusts, scab and powdery mildew on ornamentals. Some fruit diseases, including brown rot and scab on stone fruits. Listed vegetables, fruit trees, roses, flowers, shrubs and shade trees	The most widely used broad spectrum protectant fungicide. This is a contact fungicide. Not recommended for **pittosporum** or **schefflera** as phytotoxicity may result. Discoloration of blooms may occur, especially with roses. NO LONGER LABELED FOR HOMEOWNER TURF USE.
Copper compounds	Bonide Copper Spray or Dust, Bonide Liquid Copper, Dragon Copper Fungicide, Hi- Yield Cop per Fungicide, Ferti-lome Black Spot & Powdery Mildew control, and others	Many fungal and bacterial diseases, including powdery and down y mildew, fungal leaf spots, anthracnose, bacterial leaf spot and/or blight, fire blight and rust on a wide variety of fruits, vegetables and ornamentals.	Broad spectrum protectant fungicide. Although considered "safe" by many organic growers, copper is toxic to humans so label directions and harvest intervals should as always be followed carefully. Discoloration of blooms can occur on certain varieties of ornamentals. To avoid this problem, do not spray prior to or during the flowering period. Foliage discoloration may occur with some plants as well. Refer to individual product label for plants which may be treated.
Liquid lime-sulfur (calcium polysulfides)	Ortho Dormant Disease Control Lime-Sulfur Spray, Hi-Yield Improved Lime Sulfur Spray, Lilly Miller PolySul Summer and Dormant Spray Concentrate, Bonide Lime- Sulfur Spray, Bonide Oil Lime & Sulfur spray, and others	Used in the dormant season to kill overwintering fungal spores of black spot, powdery mildew and rust of rose, leaf curl and shot-hole of peach, cane blight and leaf spot of brambles. Some brands labeled for delayed dormant and/or growing season applications for scab and powdery mildew of apple, anthracnose, rust and powdery mildew of blackberry and powdery mildew and scab on pear. During the growing season used for powdery mildew on many ornamentals and black spot of rose.	Broad spectrum protectant fungicide. The is a contact fungicide. Labeled for roses, peaches, pears, brambles, fruit trees, deciduous hedge plants, delphinium, lilacs, euonymous, columbine, crepe myrtle, sweet peas, zinnias, fruits, ornamentals, and tuberous begonias. Do not spray when temperature is expected to exceed 80F within 24 hours. Spray early in the morning or late in the evening to avoid burning of foliage. Also controls mites and scale.
Mancozeb	Bonide Mancozeb Flowable with Zinc	Many vegetable diseases including anthracnose, fungal leaf spots, downy mildew, early blight, gummy stem blight, late blight, scab, rust and smut. Many ornamental diseases including anthracnose, b lack spot, Botrytis, cedar-apple rust, downy mildew, fungal leaf spots, and other rusts. A few brands are labeled for common fungal lawn diseases.	Broad spectrum protectant fungicide. This is a contact fungicide. When applied to plants not on the label the product should be tested on a small area of the plant or small area of the planting first. Most small container products are not labeled for use on home fruit trees. Treated ornamentals should not be used for food purposes. Be sure to observe harvest intervals on label when applied to vegetables.
Maneb	Hi-Yield Maneb Lawn and Garden Fungicide	Diseases of shrubs, flowers, and turfgrass in the home landscape; various diseases of the following vegetables: beans, cucumbers, peppers, tomatoes, and watermelons.	General protectant fungicide. This is a contact fungicide.

COMMON NAME (i.e. Active Ingredient)	BRAND NAME(S)	DISEASES CONTROLLED	COMMENTS
Myclobutanil	Spectracide Immunox (several), Ferti-lome F-Stop Granular Fungicide, Green Light Fung-Away Systemic Granules	Good for powdery mildew, black spot of rose, fungal leaf spots, rusts, anthracnose and other diseases of flowers and ornamental shrubs and trees. Controls brown patch, dollar spot, melting out, rust, large patch, fusarium blight, and anthracnose on lawns. Also controls powdery mildew, scab and rust on apples, brown rot and other diseases on stone fruits and anthracnose, b lack rot and powdery mildew on grapes.	Systemic fungicide. Provides better powdery mildew control than most other fungicides. Overdosage to ornamentals can result in foliar greening, shortened internodes and/or thickened leaves. For use on turf, proper identification of the causal disease organism is key. Contact local county agents for more information. Not labeled for vegetable crops. Avoid exclusive use of this product for resistance management.
PCNB	Terraclor 75WP, Ferti-lome Azalea, Camellia, Crape Myrtle Insecticide and Fungicide, Hi-Yield Turf and Ornamental Fungicide (containing 10% PCNB), Hi-Yield Terraclor Granular Fungicide	Turf, ornamental and vegetable diseases caused by basidiomycetes, including brown patch, dollar spot, southern blight (white mold), *Helminthosporium* leaf spot and melting out, damping off (*Rhizoctonia* spp. only), *Sclerotinia,* azalea (Ovulinia) and camellia flower blight, *Rhizoctonia* root and crown diseases. Specific vegetable diseases on label include *Rhizoctonia* root and stem rot of beans, Southern blight of peanuts, tomatoes and peppers, club root (*Plasmodiophora*) of broccoli, brussel sprouts, cabbage and cauliflower and scab and *Rhizoctonia* of potatoes.	Protectant preventative fungicide, specific for basidiomycetous fungi. Usually formulated as wettable powder or granules. Should be lightly watered in after applying to turf. For ornamentals drench or incorporate the product thoroughly into the soil for best results. Do not apply to ***Philodendron*** or ***Pilea***. For vegetables application must be at planting or transplanting either by soil drench, incorporation, or in furrow.
Propiconazole	Ortho Lawn Disease Control and Ferti-lome Liquid Systemic Fungicide	Turf, ornamental, flower, shrub care against powdery mildew, dollar spot, anthracnose, rust, scab, tip blight, brown spot, etc.	A water-based systemic fungicide that prevents major diseases on roses, flowers, lawns, trees, and shrubs. Do not apply this product to African violets, Begonia, Boston ferns, or Geraniums.
Streptomycin sulfate	Ferti-lome Fire Blight spray, Bonide Fire Blight spray, Agri-mycin 17	Controls fire blight of apple and pear. Some brands also labeled for fire blight of pyracantha, bacterial wilt of chrysanthemum, bacterial stem rot of Dieffenbachia cuttings, bacterial leaf spot on philodendron, crown gall on roses, and bacterial spot on tomatoes and peppers.	Actually a bactericide/antibiotic compound. Has no fungicidal activity. When used for fire blight control of apples and pears it must be applied du ring bloom prior to symptoms appearing to be effective. Sprays should begin at 20-30% bloom and continue every 3-4 days until petal fall. Do not apply when fruit is visible. Do not apply within 30 days of harvest for pears. Do not apply within 50 days of harvest for apples. within 50 days of harvest for apples.

HOMEOWNER FUNGICIDE GUIDE (continued)

COMMON NAME (i.e. Active Ingredient)	BRAND NAME(S)	DISEASES CONTROLLED	COMMENTS
Sulfur	Ferti-lome Dusting Sulfur, Bonide Liquid Sulfur, Bonide Sulfur Plant Fungicide, Safer Garden Fungicide, others	Controls diseases of fruit including powdery mildew, cedar apple rust and scab of apples, brown rot and scab of peach, plum and nectarine, powdery mildew on brambles and strawberry. Also labeled for powdery mildew, leaf spots, rust and Botrytis on many vegetables and ornamentals (includes black spot of rose).	Broad spectrum protectant fungicide. This is a contact fungicide. Formulated as a wettable powder or dust. Should not be used when the temperature is above 90 degrees or within four weeks of an oil spray as injury to the foliage may occur. Refer to individual product label for plants which may be treated. Do not use on a**pricots, cucumbers, d'Anjou pears, melons, spinach, squash** or **viburnum** as sulfur causes injury and defoliation to these plants. Also controls mites. Residue may be a problem.
Tebuconazole	Bayer Advanced All-in-One Rose & Flower Care; Bayer Advanced 3-in-1 Insect, Disease, & Mite control, Bayer Advanced Disease Control for Flowers, Roses, and Shrubs	Controls black spot, powdery mildew, rust, and southern blight on roses, flowers, azaleas, rhododendrons, camellias and other landscape ornamental shrubs.	Systemic fungicide, insecticide, fertilizer- all-in-one. Protects against insects and disease for up to 6 weeks. No spraying, just mix & poor.
Thiophanate methyl	Cleary's 3336, Ferti-lome Halt Systemic Rose and Flower Fungicide, Scott's Lawn Fungus Control, Green Light Systemic Fungicide	Anthracnose, dollar spot, Rhizoctonia (Brown patch), Helminthosporium leaf spot (melting out), Fusarium patch on lawns. Foliar diseases of ornamentals including anthracnose, black spot of rose, Botrytis, fungal leaf spots, powdery mildew, Ovulinia blight and Phomopsis blight on juniper. Soil/ root diseases of flowering & bedding plants and woody ornamentals caused by Fusarium, Rhizoctonia, Sclerotinia, and Thielaviopsis spp. Bulb diseases caused by Botrytis, Fusarium, Rhizoctonia, Sclerotinia, Fusarium and Penicillium spp.	Broad spectrum systemic fungicide. Usually available as wettable powder. Does **not** control Pythium or Phytophthora spp. A preliminary trial is suggested on a small scale when applying to a plant not listed on the label but for a listed disease problem. Wait 5-7 days before evaluating any potential injury. Not recommended for ***Nephrolepis exhalta, Plectranthrus austrailis,*** and ***Hatiora gaertneri.*** Repeated, exclusive use of thiophanate methyl may lead to buildup of resistant fungi and loss of control.
Triadimefon	Green Light Fung-Away Systemic Fungicide (several products), Bonide Bayleton Systemic Fungicide, Bayer Advanced Fungus Control for Lawns, Hi-Yield Lawn Fungicide Granules containing Bayleton	Turf diseases including brown patch, dollar spot, rusts, anthracnose, southern blight, and Fusarium patch. Ornamental diseases including flower blights (*Ovulinia* and *Sclerotinia* spp.), fungal leaf spots, powdery mildew and rusts.	Systemic fungicide. Provides better powdery mildew control than most other fungicides. Can cause some foliar discoloration and distortion on roses. Bayleton 50%DF is labeled for use on bearing apple trees for cedar apple rust and powdery mildew and grapes and pears for powdery mildew. However, most homeowner brands/ repackages of triadimefon are **not** labeled for use on bearing fruit and nut trees or any part of plants used for consumption. Check the individual product label.
Triforine	Ortho Rose Pride Orthenex Insect & Disease Control, Ortho RosePride Funginex	Black spot, powdery mildew, and rust of roses, powdery mildew on azaleas, begonias, delphinum, kalanchoe, plane tree, calendula, crepe myrtle, dahlia, euonymous, jerusalem thorn, lilac, phlox, snapdragons, Photinia, and zinnias, rust on aster, carnation and oxalis, petal blight on azaleas and rhododendron and Entomosporium leaf spot on Photinia.	Locally systemic fungicide. Triforine voluntarily cancelled by manufacturer, may become increasingly difficult to find as existing product supply is used.

HOMEOWNER TURF DISEASE CONTROL

Elizabeth Little, Extension Homeowner IPM Specialist

Proper management is of utmost importance in preventing turf disease. Most of the time, culture and environment are the key reasons diseases develop, since potential turf pathogens are virtually always present. Disease problems are encouraged by improper watering, improper fertilization, nutrient deficiencies, excessive thatch, and improper mowing. Effective disease management centers on avoiding these problems through sound turf management and prevention of plant stress. In most cases, presence of a disease indicates an underlying cultural and/or environmental problem that needs to be addressed. Fungicides are not always necessary and when used should be part of a total management program. Follow label recommendations for rates and safety precautions when using all pesticides.

BROWN/LARGE PATCH ***(Rhizoctonia solani)***
DOLLAR SPOT ***(Sclerotinia homeocarpa)***

Management Tips:

- Use low to moderate amounts of nitrogen, moderate amounts of phosphorous and moderate to high amounts of potash.
- Avoid nitrogen applications when the disease is active.
- Increase the height of cut.
- Increase air circulation.
- Minimize the amount of shade.
- Irrigate turf early in the day.
- Improve the drainage of the turf.
- Reduce thatch.
- Remove dew from the turf early in the day (drag a hose over the turf).
- Warm season grasses — FALL preventative applications are BEST/MOST EFFECTIVE (Sept-Oct), with a follow-up SPRING application.

PESTICIDE	RATE	REMARKS
Captan (Hi-Yield Captan Fungicide 50% WP)	Use 5 tsp/gal water for Brown Patch.	Apply 1 gal/100ft^2. Begin application when new growth starts in the spring. Do NOT exceed 2 applications/year.
Maneb, Mancozeb (Hi-Yield Maneb Lawn & Garden)	See individual product labels.	Apply every 7-14 days as needed.
Myclobutanil (Immunox Lawn Disease Control-RTU, Concentrate, and Granules)	4-8 lbs/1000 sq. ft.	Apply every 14-28 days as needed.
PCNB (Terraclor 75WP, Hi-Yield Terraclor Granular Fungicide, Hi-Yield Turf & Ornamental Fungicide containing 10% PCNB, Hi-Yield PCNB Granular Fungicide)	Brown Patch: 16 oz/1000 sq. ft. In 10-15 gals. Of water for warm season turfs. 3-4 oz/1000sq.ft. In 3-6 gals of water for cool season turfs. Dollar Spot: 7-10 oz/1000 sq. ft. In 5-10 gals of water.	Treated areas should be watered following application to move material to soil. Caution on cool season turfs for phytotoxicity. Retreat in 3-4 weeks if disease reappears.
Thiophanate methyl (Cleary's 3336, Scotts Lawn Fungus Control)	wettable powder(50%)-2 oz/3-5 gals water/1000sq.ft. flowable (46.2%)-1-2 oz/1000 sq. ft.	Apply every 7-14 days as needed.
Triadimefon (Bayleton, Green Light Systemic Lawn Spray Hose-end Concentrate, Hi-Yield Lawn Fungicide Granules, Bayer Advanced Fungus Control for Lawns)	See individual product labels.	Apply at 15-30 day interval as needed. Protective activity can be longer than 30 days depending on environmental conditions.

FADING OUT ***(Curvularia sp.)***
MELTING OUT ***(Helminthosporium sp.)***
LEAF SPOTS, RUST, ANTHRACNOSE

Management Tips:
- Increase the height of cut.
- Reduce turf stress by using lightweight equipment.
- Increase air circulation to speed turf's drying process.
- Avoid application of high rates of water-soluble nitrogen in the spring.
- Minimize the amount of shade.
- Irrigate turf deeply and as in frequently as possible.
- Reduce thatch in the early spring or fall for cool-season turfgrass and in the summer for warm-season turfgrass.

PESTICIDE	RATE	REMARKS
Maneb, Mancozeb (Hi-Yield Maneb Lawn & Garden)	See individual product labels.	Apply every 7-14 days as needed.
Myclobutanil (Immunox Lawn Disease Control- RTU, Concentrate, and Granules)	4 lb./1000 sq.ft.	Apply every 14-28 days as needed.
PCNB (Terraclor 75WP, Hi-Yield Terraclor Granular Fungicide, Hi-Yield Turf & Omamental Fungicide containing 10% PCNB, Hi-Yield PCNB Granular Fungicide)	7-10 oz/1000sq.ft. In 5-10 gals of water.	Treated areas should be watered following application to move material to soil. Caution on cool season turfs for phytotoxicity. Retreat in 3-4 weeks if disease reappears.
Thiophanate methyl (Cleary's 3336, Scotts Lawn Fungus Control)	1-2 oz/1000 sq.ft. In 3-5 gals of water (anthracnose of cool season turfs).	Apply 10-14 days as needed.
Triadimefon (Bayleton, Fung-Away, Procide, Hi-Yield Lawn Fungicide Granules, Bayer Advanced Fungus Control for Lawns)	See individual product labels.	Apply at 15-30 day interval as needed. Protective activity can be longer than 30 days depending on environmental conditions.

FUSARIUM ***(Fusarium sp.)***

Management Tips:
- Maintain balance fertility.
- Avoid using lime. Alkaline soils enhance disease development.
- Increase air circulation to speed turf's drying process.
- Minimize the amount of shade.
- Reduce thatch.

PESTICIDE	RATE	REMARKS
Myclobutanil (Immunox Lawn Disease Control Granules)	4-8 lb/1000 sq.ft.	Apply 14-21 days, when conditions are favorable for disease development.
Thiophanate methyl (Cleary's 3336, Scotts Lawn Fungus Control)	Patch: 2oz/1000sq.ft. Repeat at 5-14 day intervals. Blight: 4-8oz/1000sq.ft. Apply 2 applications at 10-14 day intervals.	Apply every 7-14 days as needed.
Triadimefon (Bayleton, Fung-Away, Hi-Yield Lawn Fungicide Granules, Bayer Advanced Fungus Control for Lawns)	See individual product labels.	Apply first in mid-June or 30 days prior to time blight normally becomes evident.

FAIRY RING ***(various fungi)***

Management Tips:
- Avoid using root zone mixes with high levels of undecomposed organic materials.
- Reduce thatch.
- Irrigate deeply.
- Use nitrogen fertilizer to mask symptoms on some types of fairy ring.
- Use soil wetting agents to help penetrate hydrophobic areas.
- **NO PESTICIDES FOR HOMEOWNER USE.**

GRAY LEAF SPOT ***(Pyricularia grisea)***

Management Tips:
- Avoid medium to high nitrogen levels during mid-summer.
- Irrigate turf deeply and as infrequently as possible to avoid water stress.
- Allow water to remain on leaves for only a short period of time.
- Reduce thatch.
- When possible, plant turfgrass that is resistant to gray leaf spot.
- Avoid using herbicides or plant growth regulators when disease is active

PESTICIDE	RATE	REMARKS
Propiconazole (Banner Max)	Refer to label for rates (1-2 fl. oz./1000 sq. ft.)	Local systemic; provides some control, best used in rotation or tank mix with other chemistries.
Thiophanate methyl (Cleary's 3336)	Refer to label for rates (1-2 fl. oz./1000 sq. ft.)	Local systemic; provides some control, best used in rotation or tank mix with other chemistries.

PYTHIUM BLIGHTS
PYTHIUM ROOT ROTS
(Pythium sp.)

Management Tips for Pythium Blight:
- Avoid mowing wet turf when temperature is over 70°F to minimize spreading the disease.
- Reduce thatch.
- Apply less than ½ pound of nitrogen per 1000 square feet a month during hot weather.
- Increase air circulation to speed the drying process of the turf.
- Minimize the amount of shade.
- Irrigate turf early in the day.
- Improve the drainage of the turf.
- Irrigate turf deeply and as in frequently as possible.

Management Tips for Pythium Root Rot:
- Increase the height of cut.
- Apply optimum amounts of nitrogen, phosphorous and potash.
- Reduce mowing frequency and use lightweight mowers.
- Avoid overwatering.
- Apply low amounts of nitrogen in the spring when roots are forming.
- Minimize the amount of shade.
- Improve the drainage of the turf.
- Reduce soil compaction through aerification by using lightweight equipment.

PESTICIDE	RATE	REMARKS
Maneb, Mancozeb (Hi-Yield Maneb Lawn & Garden)	See individual product labels.	Apply every 5 days as needed.
Aluminum tris (Monterey Aliette)	4 oz./1000 sq. ft.	Every 14 days

SPRING DEAD SPOT ***(Leptosphaeria)***

Management Tips:
- Avoid late summer or fall applications of nitrogen fertilizers which may enhance disease severity.
- Use ammonium sources of nitrogen for fertilizer from spring through early August.
- Control weeds in affected turf to enhance recovery from spring dead spot.
- Apply moderate to high levels of phosphorous, potash, and minor elements.
- Improve drainage of turf.
- Reduce thatch.
- Use preventive fungicides applications in late September and October.

PESTICIDE	RATE	REMARKS
Myclobutanil (Immunox Lawn Disease Control - Ready to Spray Concentrate)	See Label.	Start treating when grass begins to turn green in spring or when signs of disease are first noticed.

TAKE-ALL PATCH ***(Gauemannomyces graminis)***
TAKE-ALL ROOT ROT
BERMUDAGRASS DECLINE

Management Tips:
- Maintain soil pH below 6.5, preferably between 5.5 and 6.0.
- Manganese deficiency enhances development of take-all patch. Supplemental applications of this in fall or spring should reduce disease severity (rate of 2lb/acre).
- Avoid excessive irrigation and nitrogen applications.
- Improve surface and subsurface drainage.
- Reduce thatch.
- Aerate the soil.
- Application of sphagnum peat moss (3.8 cu ft./1000 sq ft).
- Use preventive fungicides (in fall, prior to dormancy, and early spring). FALL FUNGICIDES (Sept-Oct for Warm Season grasses) and follow-up early spring application — most effective. Summer applications NOT effective.

PESTICIDE	RATE	REMARKS
Myclobutanil (Immunox Lawn Disease Control- RTU, Concentrate, and Granules; Green Light Fung-Away Systemic Granules)	8 1b/1000 sq.ft.	Spring/Fall: 28 day intervals. Optimum disease control is achieved when the product is applied preventively. To reduce the severity of take-all, make 1 to 2 applications in Sept/Oct when night temps. drop below 55°F and 1 to 2 applications in the spring.
Triadimefon (Bayleton, Fung-Away, Hi-Yield Lawn Fungicide Granules; Green Light Systemic Lawn Spray Hose-end Concentrate, Bayer Advanced Fungus Control for Lawns)	See individual product labels.	Apply at 15-30 day interval as needed. Protective activity can be longer than 30 days depending on environmental conditions.

NEMATODES

Management tips:
- Promote root growth.
- Reduce stress.
- Clean all equipment.
- If suspect nematodes are a problem, contact local extension office to have a sample sent.

AMENDMENT (non-chemical)	RATE	REMARKS
Chitin	Depends upon soil analysis	A single annual application is usually sufficient for nematode control. Chitin is a non-chemical soil amendment that promotes growth of beneficial soil microorganisms which in turn feed on nematodes, whose body is made of chitin. This may not be practical for large turf areas.