

Diseases

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Fungicides and bactericides play an important part in the prevention of container and field-grown ornamental and flower diseases. They do not take the place of cultural control methods, but should be used to complement them. In some disease situations there are no effective chemicals available. Only chemicals registered by the Environmental Protection Agency (EPA) are recommended.

Most fungicides on the market protect woody shrubs, ground cover plants, and flowers against diseases. This protection is accomplished by preventing plant pathogens from becoming established. Systemic fungicides are therapeutic and may eradicate pathogens that are already established. Because chemicals are subject to weathering and degradation, they must be reapplied to the soil or container or susceptible parts at regular intervals as long as the danger of plant disease exists. In general, protectants must **not** be reapplied more frequently than recommended treatment intervals, or applied in excess of recommended rates.

In every instance, the manufacturer's label should be read carefully and attention should be directed particularly to the safety measures listed on the label regarding mixing, handling, compatibility with other chemicals, and application methods and rate. It is always essential that the user familiarize himself with the antidote given on the label. In many instances, the addition of a surfactant will improve retention of the chemical.

Table 4.1 - Common Diseases and Chemical Control Options

Plant Disease	Fungicide Rate/100 Gal	Remarks
Ajuga Sclerotium rot	Terraclor (75% WP) 2.0 lb/1,000 sq ft or 2.5 lb/300.0 gal water; quintozone	Dust or drench on soil surface before planting and thoroughly work into the top 2 inches of soil.
	Heritage (50%); 1.0-4.0 oz (spray) 0.2-0.9 oz (drench) azoxystrobin	Apply every 1 to 4 weeks.
Andromeda (Japanese) (<i>Pieris</i> spp.)	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Daconil Weather Stik 2.0 pt chlorothalonil	Spray at new leaf emergence or at first sign of diseases and at 7- to 14-day intervals.
<i>Phytophthora</i> dieback	Alliette (80% WDG) 1.3-4.0 lb fosetyl-A	Spray at new leaf emergence or at first sign of diseases and at 7- to 14-day intervals.
	FenStop 7.0-14.0 fl oz fenamidone	Spray plants at a 28-day interval.
Phytophthora root rot	Alliette (80% WDG) 1.0-2.0 lb/1,000 sq ft; fosetyl-Al	Drench Alliette monthly (2.0 pt/sq ft) over the surface of the potting medium.
	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Subdue MAXX 1.0-2.0 fl oz mefenoxam	Repeat at 3-month intervals. Provide good drainage. After application, irrigate to thoroughly wet soil.
	Terrazole (35% WP) 3.5-10.0 oz etridiazole	Treat soil at 4- to 12-week intervals.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
Arborvitae Phomopsis needle twig blight	Cleary 3336-WP (50%) 1.5 lb thiophanate methyl	Begin application at bud break and repeat at 7- to 10-day intervals throughout the growing season.
	Heritage (50%) 1.0-4.0 oz azoxystrobin	Apply at 1- to 4-week intervals.
Cercospora blight	Cleary 3336-WP (50% WP) 1.5 lb thiophanate methyl	Cleary 3336 should be applied when disease first appears and repeat on 10- to 14-day intervals. Shorten interval during humid, rainy weather.

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Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Arborvitae Cercospora blight (cont.)	Fore (80% WP) or Dithane T/O Rainshield Dithane WF Fore Flowable Rainshield NT or Fore WSP Rainshield 1.5 lb or 1.2 qt mancozeb	Mancozeb should be applied on 7- to 10-day intervals.
Aucuba Phytophthora root rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Subdue MAXX 1.0-2.0 fl oz mefenoxam	See Andromeda.
	Terrazole (35% WP) 3.5-10.0 oz etridiazole	Treat soil at 4- to 12-week intervals.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
Azalea Cylindrocladium root rot	Fore Rainshield NT Dithane T/O Rainshield Dithane WF or Fore WSP Rainshield 1.5 lb or 1.2 qt mancozeb	See Arborvitae.
	Cleary 3336-WP (50% WP) 0.8 lb thiophanate methyl	Drench Cleary 3336 on the surface of growing medium to prevent disease development. Repeat at 2- to 4-week intervals during disease pressure period.
	Terraguard 50W triflumizole	Soil drenched for propagation beds, 6.0-8.0 oz or established root systems 6.0 to 12.0 oz.
	OHP 26 GT-O 1.0 qt; iprodione	Dip cuttings for 5 minutes prior to planting.
Exobasidium leaf and flower gall	Fore Rainshield NT Fore WSP Rainshield Dithane T/O Rainshield NT or Dithane WF 1.5 lb or 1.2 qt mancozeb	Hand pick infected leaves and remove from plant. Apply mancozeb just before leaves unroll in spring and 10 days later.
Rust	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray to run-off when rust first appears.
Botrytis blight (Gray mold)	Compass 2.0-4.0 oz; trifloxystrobin	Spray at 7- to 14-day intervals.
	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb; iprodione	Apply to petals to protect from disease. Continue at 10- to 14-day intervals as long as disease conditions are favorable.
	Touche (50% EG) 0.5-1.0 lb vinclozolin	Apply at 10- to 15-day intervals.
	Cleary 3336-WP (50% WP) 0.8 lb thiophanate methyl	Repeat every 7- to 10-days as needed during disease periods.
Ovulinia petal blight	Strike (25% WDG) 8.0-16.0 oz triadimefon	Apply Strike to all flower buds to point of run off. Application should be made during the expanded bud stage (color showing). A second application may be needed.
	Cleary 3336-WP (50% WP) 0.5 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply Cleary 3336 as flowers open. Repeat every 4 to 6 days as needed during disease periods.
	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Daconil Weather Stik 1.4 pt chlorothalonil	Spray Daconil every 7 days during wet weather.

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Azalea Ovulinia petal blight (cont.)	Fore (80% WP) or Dithane T/O (75% DF) or Dithane WF (4F) or Fore Flowable (4F) 1.5 lb or 1.2 qt mancozeb	Spray mancozeb or ziram at 7- to 10-day intervals when flow- ers start to show color.
	Ziram (F-4) 3.0-4.0 pt ziram	Spray mancozeb or ziram at 7- to 10-day intervals when flow- ers start to show color.
Phomopsis dieback	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Spray at 7- to 10-day intervals. Prune out all diseased branches. Avoid stress.
Phytophthora root and crown rot	Alude 1.0-2.0 qt Vital 2.0-4.0; phosphite	Spray every 7 days.
	Subdue MAXX 0.6-1.2 fl oz mefenoxam	Thoroughly wet soil after application of Subdue and repeat at 3-month intervals.
	Terrazole (35% WP) 3.5-10.0 oz etridiazole	Treat soil at 4- to 12-week intervals.
	Banol (66.5%) 20.0-30.0 fl oz propamocarb hydrochloride	Treat soil at 3-week to 3-month intervals.
	FenStop 7.0-14.0 fl oz; fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
Phytophthora shoot blight	Alliette (80% WDG) 2.5-5.0 lb; fosetyl-Al	One application every 30 days.
	Alude 1.0-2.0 qt Vital 2.0-4.0; phosphite	Spray every 7 days.
	Daconil Weather Stik 1.4 pt chlorothalonil	Spray to run-off. Apply at new leaf emergence and early bloom.
	FenStop 7.0-14.0 fl oz; fenamidone	Spray plants at a 28-day interval.
Powdery mildew	Strike (25% WDG) 2.0-4.0 oz; triadimefon	Spray to run-off when mildew first appears.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Cygnus (50%) 1.6-3.2 oz; kresoxim-methyl	Apply at 10- to 14-day intervals.
	Banner Maxx 2.0-4.0 fl oz propiconazole	Apply at 2- to 3-week intervals.
Rhizoctonia web blight	Medallion (50% WP) 1-2 packets fludioxonil	Only in greenhouses and closed structures at 7- to 14- day intervals.
	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Avoid crowding the plants. Use a drench spray treatment. Repeat at 2- to 4-week intervals.
	OHP 26 GT-O 1.0-2.5 qt; iprodione	Spray plants every 7 to 14 days.
Septoria leaf spot	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Repeat at 10- to 14-day intervals throughout the growing season.
Boxwood (English, American, Korean, Japanese)	Alude 1.0-2.0 qt Vital 2.0-4.0; phosphite	Spray every 7 days.
Phytophthora root rot	Alliette (80% WDG) 6.4-12.8 oz (drench) sq ft; fosetyl-Al	See Azalea.
	Subdue MAXX 1.0-2.0 fl oz; mefenoxam	See Azalea.
	FenStop 7.0-14.0 fl oz; fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
	Terrazole (35% WP) 3.5-10.0 oz etridiazole	See Azalea.

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Table 4.1 - Common Diseases and Chemical Control Options (cont.)		
Plant Disease	Fungicide Rate/100 Gal	Remarks
Boxwood Phytophthora root rot (cont.)	Banol (66.5%) 20.0-30.0 fl oz propamocarb hydrochloride	Treat soil at 3-week to 3-month intervals.
Camellia Leaf gall	See Azalea.	Hand pick infected leaves.
Sclerotinia flower blight	Terraclor (75% WP) 1 cup in enough water to give thorough coverage of 100 sq ft quintozene	Drench soil surface in late December or early January.
Phytophthora root rot	See Azalea.	
Cedar Phomopsis needle and twig blight	Heritage (50%) 1.0-4.0 oz azoxystrobin	Apply every 1 to 4 weeks.
	Cleary 3336-WP (50% WP) 1.5 lb thiophanate methyl	Begin application at bud break and repeat at 7- to 10- day intervals throughout the growing season.
Cercospora blight	Fore (80% WP) or Dithane T/O (75% DF) or Dithane WF (4F) or Fore Flowable (4F) 1.5 lb or 1.2 qt mancozeb	Spray at 7- to 10-day intervals, starting when plants are well leafed out or at first sign of disease.
	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Spray at 7- to 10-day intervals, starting when plants are well leafed out or at first sign of disease.
Chrysanthemum Rhizoctonia root rot	Medallion (50% WP) 1 packet fludioxonil	Apply after transplant (1.0 to 2.0 pt/sq). Repeat every 14 days.
	Chipco 26019 (50% WP) 0.4 lb iprodione	Apply after transplant (1.0 to 2.0 pt/sq). Repeat every 14 days.
	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply Cleary 3336-F as a heavy drench or spray.
Mycosphaerella ray blight	Banner Maxx 2.0-4.0 fl oz propiconazole	Apply on a 14-day schedule.
	Chipco 26019 (50% WP) 1.0-2.0 lb iprodione	Apply at 7- to 10-day intervals.
	Daconil Weather Stik 1.4 pt chlorothalonil	Apply first spray of Daconil just before flower color shows and at 7-day intervals.
	Fore (80% WP) or Dithane T/O (75% DF) or Dithane WF (4F) or Fore Flowable (4F) 1.5 lb or 1.2 qt mancozeb	Apply mancozeb at 7- to 10-day intervals. Apply at transplant of cuttings.
	Maneb 80 (80% WP) or Maneb Plus Zinc F4 Fungicide (37% F) 1.0 - 1.5 lb of 80 or 1.2 qt of F4; maneb Fore WSP Rainshield or Fore Rainshield NT 1.5 lb mancozeb	Apply maneb at 7- to 10-day intervals. Apply at transplant of cuttings.
	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Apply at first sign of disease and repeat at 10- to 14- day intervals.

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Chrysanthemum Mycosphaerella ray blight (cont.)	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply Cleary 3336 at 7- to 10-day intervals as needed.
	Touche (50% EG) 0.5-1.0 lb vinclozolin	Spray at 10- to 14-day intervals.
Botrytis gray mold and <i>Septoria</i> leafspot	Fore WSP Rainshield or Fore Rainshield NT 1.5 lb Junction (15% DF) 1.5 lb mancozeb	Apply at 7- to 10-day intervals.
	Daconil Weather Stik 2.0 pt Concorde (54% SST) 1.4 pt chlorothalonil	Apply at prebloom and repeat at 7- to 14-day intervals.
	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply at prebloom and repeat at 7- to 14-day intervals.
Leaf rust	Strike (25% WDG) 2.0-4.0 oz triadimefon	Apply at first sign of disease and repeat at 7- to 14-day intervals.
	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Cygnus (50%) 3.2-6.4 oz Kresoxim-methyl	Apply at 10- to 14-day intervals.
	Fore (80% WP) or Dithane T/O (75% DF) or Dithane WF (4F) or Fore Flowable (4F) 1.5 lb or 1.2 qt mancozeb	Spray at 7- to 10-day intervals.
Pythium root rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Subdue MAXX 0.05-1.0 fl oz mefenoxam	See Azaleas
	Terrazole (35% WP) 4.0-6.0 oz etridiazole	Repeat bedding plants at 4- to 8-week intervals. Repeat container plants at 4- to 12-week intervals.
	Banol (66.5%) 20.0-30.0 fl oz propamocarb hydrochloride	Treat soil at 3-week to 3-month intervals.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
Powdery mildew	Rubigan 3.0-5.0 fl oz; fenarimol	Spray every 10 to 14 days.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	See manufacturer's directions. Spray to run-off when mildew first appears.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Southern blight (<i>Sclerotium</i>)	Terraclor (25% WP) 8.0 oz quintozene	See manufacturer's directions.
Crabapple Cedar-apple rust	Banner Maxx 2.0-4.0 fl oz propiconazole	Three applications every 14 days starting at green tip.
	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Daconil Weather Stik 1.4 pt chlorothalonil	Start as flower buds open and spray 3 times at 10-day intervals.

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Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Crabapple Cedar-apple rust (cont.)	Fore (80% WP) or Dithane T/O (75% DF) or Dithane WF (4F) or Fore Flowable (4F) or Penncozeb (80% WP) or Penncozeb DF (75% DF) 1.5 lb or 1.2 qt; mancozeb	Begin application at 1/4 inch to 1/2 inch green tip and continue on a 7- to 10-day schedule.
	Maneb 80 (80% WP) 1.5 lb maneb	Begin application at 1/4 inch to 1/2 inch green tip and continue on a 7- to 10-day schedule.
	Cleary 3336-WP (50% WP) 1.0 lb thiophanate methyl	Apply at 10- to 14-day intervals.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Fire blight	Alliette (80% WP) 2.5 lb fosetyl-Al	Apply every 7 days.
	Agri-Strep 0.5 lb streptomycin sulfate	Apply at early, mid, and late flowering.
Powdery mildew	Banner Maxx, 2.0-4.0 fl oz propiconazole	Apply Banner every 14 to 21 days.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray to run-off when mildew first appears.
	Terraguard 50W 4.0-8.0 oz triflumizole	Apply as foliar spray as needed.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Scab	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Banner Maxx, 2.0-4.0 fl oz propiconazole	Banner applied on a 14-day schedule. Begin at green tip.
	Daconil Weather Stik 2.0 pt Concorde (54% SST) 1.4 pt chlorothalonil	Apply at bud break and at 7-day intervals during wet weather.
	Cleary 3336-WP (50% WP) 0.75 lb thiophanate methyl	Apply at 7- to 10-day intervals from bud break until two weeks after petal fall.
	Fore (80% WP) or Dithane T/O (75% DF) or Dithane WF (4F) or Fore Flowable (4F) or Penncozeb (80% WP) or Penncozeb DF (75% DF) 1.5 lb or 1.2 qt Junction (15% DF) 1.5 lb mancozeb	Apply at 7- to 10-day intervals from bud break until two weeks after petal fall.
	Manzate 80 (80 % WP) 1.5 lb; maneb	Apply at 7- to 10-day intervals from bud break until two weeks after petal fall.
Crape Myrtle Powdery mildew	Banner Maxx 2.0-4.0 fl oz propiconazole	Apply Banner every 21 days.
	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray Strike to run-off when mildew first appears.

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Crape Myrtle Powdery mildew (cont.)	Terraguard 50W 4.0-8.0 oz triflumizole	Use higher rates under severe conditions.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Daffodil Botrytis blight	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Apply every 10-14 days.
Fusarium and Penicillium bulb rots	Mertect 340-F 30.0 oz thiabendazole (TBZ)	Soak bulbs for 15 to 30 minutes at 55° to 75° F. Stir solution constantly.
	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Soak bulbs for 15 to 30 minutes in a warm dip (80° to 85° F.)
Dahlia Powdery mildew	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray to run-off when mildew first appears.
Botrytis blight (Gray mold)	Fore Rainshield NT or Fore WSP Rainshield 1.5 lb mancozeb	
	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Apply to protect against disease. Repeat at 10- to 14- day intervals.
	Cleary 3336-WP (50% WP) 0.75 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply to protect against disease. Repeat at 10- to 14- day intervals.
Dogwood Rhizoctonia root rot	Chipco 26019 (50% WP) 6.5 lb iprodione	Use as a drench and apply 1.0 to 2.0 pts of solution/sq ft.
Botrytis petal blight	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Apply Chipco 26019 at 7- to 14-day intervals.
	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply Cleary 3336 at 10- to 14-day intervals.
Phytophthora root rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt phosphite	Spray every 7 days.
	Subdue MAXX 1.0-2.0 fl oz mefenoxam	See Azalea.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
Septoria leaf spot	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF or Fore WSP Rainshield 1.5 lb or 1.2 qt Junction (15% DF) 1.5 lb; mancozeb	Begin at first sign of disease and spray at intervals of 7 to 10 days.
	Daconil Weather Stik 1.4 pt Concorde (54% SST) 1.4 pt chlorothalonil	Apply at early bloom. Apply at 7- to 14-day intervals.
	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Spray when disease first appears and repeat at 10- to 14-day intervals.

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Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Dogwood (cont.) Spot anthracnose, Leaf and flower blight Anthracnose (<i>Discula</i> sp.)	Fore Rainshield NT or Fore WSP Rainshield or Dithane T/O Rainshield NT or Dithane WF 1.5 lb or 1.2 qt mancozeb	Apply when buds begin to open, when bracts have fallen, 4 weeks later, and again in late summer after flower buds for next season have formed.
	Banner Maxx, 2.0-4.0 fl oz propiconazole	Apply Banner at 14-day intervals.
	Daconil Weather Stik 2.0 pts. chlorothalonil	For spot anthracnose, leaf and flower blight apply when buds begin to open. Repeat when bracts have fallen, 4 weeks later and in the late summer after flower buds have formed. For anthracnose (<i>Discula</i> sp.) apply 3 to 4 sprays during leaf expansion in the spring, at 10- to 14-day intervals.
	Maneb 80 (80% WP) or Maneb Plus Zinc F4 Fungicide (37% F) 1.0 - 1.5 lb or 0.8-1.2 qt maneb Junction (15% DF) 1.5 lb mancozeb	For spot anthracnose, leaf and flower blight apply when buds begin to open. Repeat when bracts have fallen, 4 weeks later and in the late summer after flower buds have formed. For anthracnose (<i>Discula</i> sp.) apply 3 to 4 sprays during leaf expansion in the spring, at 10- to 14-day intervals.
Powdery mildew	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray to run-off when mildew first appears.
	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
	Cygnus (50%) 1.6-3.2 oz kresoxim-methyl	
Euonymus Powdery mildew	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray to run-off when mildew first appears.
	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
	Cygnus (50%) 1.6-3.2 oz kresoxim-methyl	
Crown gall	Galltrol-A	See manufacturer's directions. Purchase healthy plants. Do not replant in beds where infected plants have been removed.
Anthracnose (<i>Colletotrichum</i>)	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF, or Fore WSP Rainshield 1.5 lb or 1.2 qt Junction (15% DF) 1.5 lb mancozeb	Spray at bud break, then repeat at 14-day intervals.
	Daconil Weather Stik 1.375 pt Concorde (54% SST) 1.37 pt chlorothalonil	Spray at bud break, then repeat at 14-day intervals.
Botrytis blight (Gray mold)	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Repeat at 10- to 14-day intervals.
	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Begin application when disease first appears and repeat at 10- to 14-day intervals.

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Euonymus Botrytis blight (Gray mold) (cont.)	Touche (50% EG) 0.5-1.0 lb vinclozolin	Repeat every 10 to 14 days.
Forsythia Rhizoctonia	Chipco 26019 (50% WP) 0.4 lb iprodione	Apply after transplanting (1.0 to 2.0 pt/sq ft). Repeat after 14 days.
	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Apply as a drench or heavy spray.
Phytophthora shoot blight	See Azalea shoot blight	
Gladiolus Botrytis leaf blight	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Chipco 26019 at 10- to 14-day intervals.
	Daconil Weather Stik 1.4 pt chlorothalonil	Apply Daconil every 7 to 10 days during normal weather, every 2 to 3 days during wet periods.
	Touche (50% EG) 0.5-1.0 lb vinclozolin	Repeat every 10 to 14 days.
Penicillium and Fusarium corm rots (pre-planting)	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Submerge clean corms for 15-30 minutes in warm water (80° to 85°F). Stir solution constantly to be sure chemical remains in suspension.
Curvularia and Leaf spots <i>Stemphylium</i>	Maneb 80 (80% WP) or Maneb Plus Zinc F4 Fungicide (37% F) 1.5 lb or 1.2 qt; maneb	Begin when flower spikes are developing. Repeat 2 to 3 times at weekly intervals.
Hawthorn Rust and <i>Fabraea</i> leaf spot	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Daconil Weather Stik 1.4 pt chlorothalonil	Spray at prebloom with cover sprays at 7- to 10-day intervals as needed.
	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF or Fore WSP Rainshield 1.5 lb; mancozeb	
Holly (Japanese) Root rot (<i>Thielaviopsis basicola</i> , <i>Rhizoctonia</i>)	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Sanitation in propagation. Apply as heavy drench or spray to 800 sq ft of bench area (1.0 to 2.0 pts/sq ft). Repeat at 2- to 4-week intervals.
	OHP 26 GT-0 13.0 fl oz	Drench 1.0 to 2.0 pints of solution per square foot every 14 days.
Rhizoctonia web blight (<i>Rhizoctonia solani</i>)	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply as a heavy drench or spray to 800 sq ft of bench or bed area, (1.0 to 2.0 pts/sq ft). Repeat at 2- to 4-week intervals.
Phytophthora and Pythium root rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Subdue MAXX 1.0-2.0 fl oz mefenoxam	See Azalea.
	Alliette (80% WDG) 1.0-2.0 lbs/1000 sq ft fosetyl-Al	
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.

4-10 Nursery Crops: Diseases

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Hydrangea Botrytis leaf blight	Fore Rainshield NT Fore WSP Rainshield Dithane T/O Rainshield NT or Dithane WF 1.5 lb; mancozeb	Apply at 7- to 14-day intervals.
	Touche (50% EG) 0.5-1.0 lb vinclozolin	Spray every 10 to 14 days.
	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Spray every 10 to 14 days.
	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply when disease first appears, repeat at 10- to 14- day intervals.
Juniper Phomopsis needle and twig blight	Cleary 3336-WP (50% WP) 1.5 lb thiophanate methyl	Begin application at bud break and repeat at 7-day intervals through the growing season.
	Fore Rainshield NT Fore WSP Rainshield Dithane T/O Rainshield NT or Dithane WF 1.5 lb mancozeb	Begin application at bud break and repeat at 7-day intervals through the growing season.
Rhizoctonia web blight (<i>Rhizoctonia solani</i>)	Cleary 3336-F 12.0-16.0 fl oz Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply as a heavy drench or spray to 800 sq ft of bench or bed area, (1.0 to 2.0 pts/sq ft). Repeat at 2- to 4-week intervals. Avoid crowding plants.
	OHP 26 GT 1.0-2.5 qt; iprodione	Spray plants every 7 to 14 days.
Phytophthora and Pythium root rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Subdue Maxx 1.0-2.0 fl oz; mefenoxam	See Azalea.
	Alliette (80% WP) 1.0-2.0 lbs/1000 sq ft; fosetyl-AI	See Azalea.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
Lilac Powdery mildew	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	Spray to run-off when mildew first appears.
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Mountain Laurel (<i>Kalmia latifolia</i>)	Daconil Weather Stik 2 pt chlorothalonil	Spray at 7-day intervals during wet weather. Spray when buds break in the spring and twice more at 2-week intervals.
Cercospora leaf spot	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
Pachysandra Volutella leaf and stem blight	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF or Fore WSP Rainshield 1.5 lb mancozeb	Apply first spray in the spring. Make 5 applications at 10- to 14-day intervals.
	Fixed Copper (WP) 1.0 lb; copper	Apply Fixed Copper at 7- to 10-day intervals.
Peony Botrytis blight (Gray mold)	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Begin when disease first appears and repeat at 10- to 14-day intervals.

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Peony (cont.) Alternaria leaf spot and Phytophthora blight	Maneb 80 (80% WP) or Maneb Plus Zinc F4 Fungicide (37% F) 1.5 lb or 1.2 qt; maneb	Begin when disease first appears and repeat at 10- to 14-day intervals.
Periwinkle (Vinca minor) Phomopsis stem rot	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Begin when disease first appears and repeat at 10- to 14-day intervals.
Photinia Powdery mildew	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	
	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Entomosporium leaf spot (<i>Entomosporium maculatum</i>)	Banner MAXX 2.0-4.0 fl oz propiconazole	Apply in early spring as growth starts and reapply on 14-day schedule until new growth is fully expanded.
	Strike (25% WDG) 16.0 oz; triadimefon	
	Daconil Weather Stik 1.4 pt Concorde (54% SST) 1.4 pt chlorothalonil	Spray at 2- to 4-week intervals. Avoid overhead irrigation. Avoid crowding containers.
	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF or Fore WSP Rainshield 1.5 lb mancozeb	Spray at 7- to 14-day intervals.
	Cleary 3336-F 12.0-16.0 fl oz thiophanate methyl	Spray at 7- to 14-day intervals.
Pine (White, Japanese, Black) Phytophthora root rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
	Subdue Maxx 1.0-2.0 fl oz mefenoxam	See Azalea.
	Alliette (80% WP) 1.0-2.0 lbs/100 sq ft fosetyl-Al	See Azalea.
Pyracantha (Firethorn) Fire blight	Alliette (80% WP) 2.5 lb fosetyl-Al	Begin spray at pre-bloom. Repeat as necessary but do not exceed one application every 7 days until blooming period ends.
	Streptomycin agric. compd. 100 ppm streptomycin sulfate	Spray when 20% of the blossoms are open and repeat 5 to 7 days during bloom period. COMMERCIAL ORNAMENTAL USE ONLY.
	Fixed copper 1.0 lb copper	Apply the first spray at bud break, 10 to 14 days later and at petal fall.
Scab	Sythane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Daconil Weather Stik 1.4 pt Concorde (54% SST) 1.4 pt chlorothalonil	Spray at bud break and repeat twice at 10-day intervals.

4-12 Nursery Crops: Diseases

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Pyracantha Scab (cont.)	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF or Fore Flowable WSP Rainshield 1.5 lb or 1.2 qt Junction (15% DF) 1.5 lb mancozeb	Spray at 7- to 14-day intervals.
	Fixed Copper 1.0 lb; copper	Spray at 7- to 14-day intervals.
	Cleary 3336-WP (50% WP) 0.8 lb thiophanate methyl	Begin when disease appears and repeat at 10- to 14- day intervals.
Rhododendron Ovulinia petal blight	Same as for Azalea.	Same as for Azalea.
Phytophthora root rot and wilt	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Subdue Maxx 1.0-2.0 fl oz mefenoxam	See Azalea.
	Alliette (80% WDG) 2.5-5.0 lb fosetyl-AI	Spray to run-off at monthly intervals.
	Terrazole (35% WP) 4.0-10.0 oz etridiazole	See Azalea.
	Banol (66.5%) 20.0-30.0 fl oz propamocarb hydrochloride	Repeat every 3 weeks to 3 months.
Rust	Same as for Azalea.	Same as for Azalea.
Botrytis gray mold	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb; iprodione	See Azalea.
	Touche (50% EG) 0.5-1.0 lb vinclozolin	See Azalea.
	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	See Azalea.
Rose Crown gall	Galltrol-A	See manufacturer's directions. Purchase healthy rose bushes. Do not injure the roots or crowns of roses.
Black spot	Banner EC Maxx, 2.0-4.0 fl oz propiconazole	Tank mix with a registered contact fungicide labeled for black spot control.
	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Daconil Weather Stik 1.375 pt chlorothalonil	Start applications in the spring as leaves expand. During dry weather, treat at 7- to 10-day intervals for Daconil.
	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Start applications in the spring as leaves expand. During dry weather, treat at 7- to 10-day intervals for Daconil.
	Fore Rainshield NT Dithane T/O Rainshield NT Dithane WF or Fore WSP Rainshield 1.5 lb Junction (15% DF) 1.5 lb mancozeb	Apply at 7- to 14-day intervals.
	Maneb 80 (80% WP) or Maneb Plus Zinc F4 Fungicide (37% F) 1.5 lb or 1.2 qt; maneb	Apply at 7- to 14-day intervals.

Table 4.1 - Common Diseases and Chemical Control Options (cont.)

Plant Disease	Fungicide Rate/100 Gal	Remarks
Rose Black spot (cont.)	Triact 70 0.5-1.0 gal, neem oil	Apply every 14 days.
Botrytis blight (Gray mold)	Decree 0.7-1.5 lb; fenhexamid	Spray every 7 to 14 days.
	Chipco 26019 (50% WP) 1.0-2.0 lb Sextant (23.3%) 1.0-2.5 lb iprodione	Apply to buds to protect against disease. Repeat at 10- to 14-day intervals.
	Cleary 3336-WP (50% WP) 0.8 lb Fungo 50 AGC 12.0-16.0 oz thiophanate methyl	Apply to buds to protect against disease. Repeat at 10- to 14-day intervals.
Downy mildew	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	Alliette (80% WDG) 2.5 lb fosetyl-AI	Apply every 7 to 14 days.
	Heritage (50%) 2.0-4.0 oz azoxystrobin	Apply every 1 to 3 weeks.
	Cygnus (50%) 3.2-6.4 oz kresoxim-methyl	
	FenStop 7.0-14.0 fl oz fenamidone	Spray plants at a 28-day interval.
Powdery mildew	Banner Maxx, 2.0-4.0 fl oz propiconazole	Thorough coverage is needed for best results.
	Systhane (40% WSP) 4.0 oz myclobutanil	Apply at 10- to 14-day intervals.
	Strike (25% WDG) 2.0-4.0 oz triadimefon	Start applications in the spring as leaves expand. Treat at 10- to 14-day intervals to protect. Spray at 7-day intervals if mildew is present.
	Cygnus (50%) 1.6-3.2 oz kresoxim-methyl	Start applications in the spring as leaves expand. Treat at 10- to 14-day intervals to protect. Spray at 7-day intervals if mildew is present.
	Terraguard 50W 4.0-16.0oz triflumizole	Apply on a 7- to 14-day interval as needed. Use the high rate on an existing infection.
Willow <i>Crown gall</i>	Galltrol-A	See manufacturer's directions.
Yew (<i>Taxus</i>) Phytophthora root rot and crown rot	Alude 1.0-2.0 qt Vital 2.0-4.0 pt; phosphite	Spray every 7 days.
	FenStop 7.0-14.0 fl oz fenamidone	Drench 1.0 to 2.0 pints per square foot at a 28-day interval.
	Terrazole (35% WP) 4.0-10.0 oz etridiazole	Repeat every 4 to 12 weeks.
	Alliette (80% WDG) 1.0-2.0 lbs/1000 sq ft; fosetyl-AI	See Azalea.

Table 4.2 - Field or Seedbed Fumigation

Soil-borne Diseases	Fumigant Application Rates/Acre	Remarks
Most soil-borne disease organisms and nematodes	Vapam; 40.0-100.0 gal in heavy soils, 25.0-50.0 gal in light soils.	<p>GENERAL DIRECTIONS FOR VAPAM</p> <p>Soil Preparation: Before treating, cultivate the area thoroughly.</p> <p>Keep the soil moist, watering if necessary until time to treat. Soil temperature should be between 60-90° F at 3-inch depth. Preplanting instruction: Cultivate 5-7 days after application to promote escape of vapors. Allow an additional 7-9 days before planting on well-drained, light- to medium-textured soil; 14 days for heavy clay or organic soil; and up to 30 days if soil temperatures are below 60° F. Use Cautions: Do not apply to confined spaces without adequate ventilation, or in greenhouses where growing plants are present. Do not apply within 3 ft of plant drip line or to areas underlaid by roots or valuable plants. Keep children and pets out of treated area.</p> <p>Sprinkling Can Application: Place 0.398 lb (1.0 pt) in sprinkling can, fill with water, and apply to 50 sq ft of well prepared soil.</p> <p>Hose Proportioner Application: Add 0.795 lb (1.0 pt) to 3 qt of water/100 sq ft. Continue watering to depth of control desired.</p> <p>Rotary Tiller Application: Sprinkle or spray using 0.795 lb (1.0 qt) in 2.5 gal of water/100 sq ft in front of tiller. Apply as fall preplant. Shanks 6-8 inches apart. Review manufacturer's instructions for application concerning rates and waiting period.</p>