TEXAS A&M AGRILIFE EXTENSION

E-159
11/07

Chemicals for Plant Disease Control at Home

Kevin Ong*

For consumers, finding the right product to control a plant disease can be confusing, especially when a specific chemical is recommended for controlling the disease, but is sold under a variety of trade names.

Plant experts often recommend a chemical by its common name, but not all product labels list the ingredients that way, using chemical terminology instead.

Another problem is the declining number of disease-control products available in small packages. Consumers forced to buy larger packages than needed are face with problems, such as:

- Instructions on large packages that give rates in quantity per acre instead of quantity per gallon.
- Large containers that cost more even though the cost per unit used is less.
- Inadequate space to safely store excess chemicals.

To help consumers find the products they need, this publication lists products by active ingredient, product name and brand. The list is based on a survey of chemical companies with products commonly found in Texas retail stores.

The products listed here are currently being formulated; discontinued products and formulations are often available at retail outlets until supplies are exhausted. This list does not include products normally packaged for agricultural use, even though some may be available in some retail outlets.

Homeowners can determine what to buy if they understand information on product labels. Every product label shows the name of the active ingredient, which is the chemical that acts against the disease pathogen. The law requires that each registered product label also includes the chemical terminology of the active ingredient. This terminology describes the chemical makeup of the compound. However, some products—usually natural products—are exempt from Environmental Protection Agency registration because they are classified as minimum risk pesticides. These products may not have complete information on their labels.

Because chemical names are long and difficult to pronounce, each chemical has been assigned an official common name which is easier for most people to use. Manufacturers are not required to put common names on labels, but some do.

Example:

Common name	**Chemical name**
Triadimefon	1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazo-1-yl)-butanone

Four tables are included in this publication to help homeowners and retailers distinguish among the products available:

- Table 1 lists common chemical names and the corresponding chemical name for each active ingredient.

•Assistant Professor and Extension Plant Pathologist, The Texas A&M University System

- Table 2 lists all trade names and manufacturers for each chemical. Combination products—those that contain more than one chemical—are included. In many cases, the additional chemicals are insecticides. Table 2 also indicates whether a product can be used on vegetables, fruits or turf/ornamentals (y = yes, n = no). Refer to the product labels for specific plants and instructions.
- Table 3 lists each product by company or brand name and types of plants the product can be used on. Refer to the product labels for specific plant types and use instructions. Table 3 also serves as a reference to the various products sold under different brand names.
- Table 4 lists the companies that formulate products under the various brand names and their Web addresses. Sample labels and information about using products usually are available at a manufacturer's Web site.

In addition to chemical information, a product label should also contain a signal word (Caution, Warning or Danger) and other information on risks, safety and first aid, and proper use of the product.

This listing is provided as a general reference. Although every attempt is made to ensure that information is complete and accurate at the time of publication, some available products may have not been listed. The homeowner should READ THE LABEL for information on proper use for their specific situation and for safety information. For additional assistance, contact your local county Extension office.

Table 1. Plant disease control chemicals.

Common name	Chemical name
1. biological	living agent: bacteria/fungus
2. botanical	products derived from plants, typically oils
3. captan	N-trichloromethylthio-4-cyclohexene-1,2 dicarboximide
4. chlorothalonil	tetrachloroisophthalonitrile
5. copper	various chemical forms of copper compounds
6. fosetyl-al	aluminum tris(O-ethylphosphonate)
7. lime sulfur	calcium polysulfide
8. mancozeb	coordination product of zinc ion and manganese ethylene bisdithiocarbamate
9. maneb	manganese ethylene bisdithiocarbamate
10. myclobutanil	alpha-Butyl-alpha-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile
11. neem	extracts from the neem tree (botanical)
12. PCNB	pentachloronitrobenzene
13. phosphorous acid salts	mono- and di-potassium salts of phosphorous acid
14. potassium bicarbonate	potassium bicarbonate
15. propaconizole	1-[[2(2,4-Dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]methyl]1-H-1,2,4-triazole
16. quarternary ammonium compound	various forms of N-alkyl ammonium chloride
17. streptomycin sulfate	streptomycin sulfate (antibiotic)
18. sulfur	sulfur
19. tebuconazole	alpha-(2-(4-Chlorophenyl)ethyl)-alpha-(1,1-dimethylethyl)-1H-1,2,4-triazole-1-ethanol
20. thiophanate methyl	dimethyl 4,4'-o-phenylenebis(3-thioallophanate)
21. triadimefon	1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazole-1-yl) butanone
22. triforine	N,N'-[1,4-piperazinediylbis(2,2,2-trichloro-ethylidene)]bisformamide

Table 2. Trade and brand names of products containing the chemical ingredients listed in Table 1, and the plants on which they can be used.

(T/O = Turf/Ornamental; V = Vegetable; F = Fruit)

Common name/type	Product name	Brand	T/O	V	F
1. **biological**	Serenade Garden Disease Control	Agraquest	y	y	y
2. **botanical**	Lawn & Turf Fungicide	Garlic GP	y	n	n
	E-rase RTU	Monterey	y	y	y
	Organic Rose & Flower Spray	Greenlight	y	n	n
	Paradigm	Parkway Research	y	n	n
3. **captan**	Captan Fruit & Ornamental	Bonide	y	n	y
	Captan Fungicide 50%WP	Hi-Yield	y	n	y
	Captan Fungicide	Southern Ag	y	n	y
captan combination product	Fruit Tree Spray	Fertilome	n	n	y
	Fruit Tree Spray	Bonide	y	n	y
	Rose Rx	Bonide	y	n	n
4. **chlorothalonil**	Fung-Onil Multi Purpose	Bonide	y	y	y
	Landscape & Garden Fungicide	Fertilome	y	y	n
	Daconil Fungicide	GardenTech	y	y	y
	Daconil	Hi-Yield	y	y	n
	Vegetable, Flower, Fruit & Ornamental Fungicide	Hi-Yield	y	y	y
	Fruit tree, vegetable & ornamental fungicide	Monterey	y	y	y
	Garden Disease Control	Ortho	y	y	y
5. **copper**	Liqui-cop	Monterey	y	y	y
	Liquid Copper Fungicide	Southern Ag	y	y	y
	Blackspot Powdery Mildew Control	Fertilome	y	n	n
	Copper Fungicide	Hi-Yield	y	y	y
	Cueva Copper Soap Fungicide	Lilly Miller	y	y	y
	Kop-R-Spray	Lilly Miller	y	y	y
	Concern Copper Soap fungicide	Safer	y	y	y
	Copper Liquid Fungicide	Bonide	y	y	y
	Copper Dust or Spray	Bonide	y	y	y
	Bordeaux Powder	Dexol	y	y	y
	Neutral Copper Fungicide	Southern Ag	n	y	y
	Bordeaux Mix Fungicide	Hi-Yield	y	y	y
copper combination product	Dragoon Dust with Copper	Bonide	n	y	n
	Garden Dust	Bonide	y	y	y
6. **fosetyl-al**	Monterey Aliette	Monterey	y	n	n
7. **lime sulfur**	Lime Sulfur Spray	Bonide	y	n	y
	Improved Lime Sulphur Spray	Hi-Yield	y	n	y
lime sulfur combination product	Oil and Lime Sulfur	Bonide	y	n	y
8. **mancozeb**	Mancozeb Flowable	Bonide	y	y	n
	Dithane M-45	Southern Ag	y	y	n
9. **maneb**	Maneb Garden Fungicide	Hi-Yield	y	y	n
10. **myclobutanil**	F-Stop	Fertilome	y	n	n
	Fung-Away Systemic Lawn Fungicide Granules	Greenlight	y	n	n
	Immunox Multipurpose Fungicide	Spectracide	y	n	n
	Immunox Lawn Disease Control	Spectracide	y	n	n
myclobutanil combination product	Fungicide Plus Concentrate	Schultz	y	n	n
	Immunox 3 in 1	Spectracide	y	n	n
	Immunox Plus	Spectracide	y	n	n

Table 2. Continued.

(T/O = Turf/Ornamental; V = Vegetable; F = Fruit)

Common name/type	Product name	Brand	T/O	V	F
11. **neem**	Rose Rx 3 in 1	Bonide	y	y	y
	Fungicide 3 in 1	Garden Safe	y	y	y
	Neem Concentrate	Greenlight	y	y	y
	Rose Defense	Greenlight	y	n	n
	Tomato & Vegetable Spray	Greenlight	y	y	y
neem combination product	Neem II	Greenlight	y	y	n
	Fruit Tree Spray	Greenlight	y	y	y
12. **PCNB**	Terraclor Granular Fungicide	Hi-Yield	y	n	n
	Turf & Ornamental Fungicide	Hi-Yield	y	n	n
	Terraclor 75WP	Southern Ag	y	y	n
PCNB combination product	Azalea, Camellia, Crape Myrtle Spray	Fertilome	y	n	n
13. **phosphorous acid salts**	Agri-fos	Monterey	y	y	y
14. **potassium bicarbonate**	Remedy	Bonide	y	y	y
	Bi-Carb	Monterey	y	y	y
15. **propaconizole**	Monterey Fungi-fighter	Monterey	y	n	y
	Infuse	Bonide	y	n	n
	Honor Guard PPZ	CSI	y	n	n
	Liquid Systemic Fungicide	Fertilome	y	n	n
16. **quarternary ammonium compound**	Consan 20	Hi-Yield	y	n	n
	Monterey M-20	Monterey	y	n	n
	Consan Triple Action	Parkway Research	y	n	n
17. **streptomycin sulfate**	Fire Blight Spray	Bonide	y	n	y
	Fire Blight Spray	Fertilome	y	n	y
18. **sulfur**	Bulb Dust	Bonide	n	n	y
	Sulfur Plant Fungicide	Bonide	y	y	y
	Wettable dusting sulphur	Fertilome	y	y	y
	Multi-purpose fungicide	Lilly Miller	y	y	y
	Sulfur Dust	Lilly Miller	y	y	y
	Garden Fungicide	Safer	y	y	y
sulfur combination product	3 in 1 Garden Spray	Safer	y	y	y
	Earth-tone 3 in 1 Disease Control	Espoma	y	y	y
19. **tebuconazole**	Disease Control for Roses, Flowers and Shrubs	Bayer Advanced	y	n	n
tebuconazole combination product	3 in 1 Insect, Disease and Mite control	Bayer Advanced	y	n	n
	All in One Rose & Flower Care	Bayer Advanced	y	n	n
	Azalea, Camelia & Rhododendron Insect and Disease Control	Bayer Advanced	y	n	n
20. **thiophanate methyl**	Halt Systemic Fungicide	Fertilome	y	n	n
	Systemic Fungicide	Greenlight	y	n	n
	Lawn Fungus Control	Scotts	y	n	n
21. **triadimefon**	Fungus Control for Lawns	Bayer Advanced	y	n	n
	Fung-Onil Lawn & Disease	Bonide	y	n	n
	Fung-Away Systemic Fungicide	Greenlight	y	n	n
	Fung-Away Systemic Lawn Fungicide Spray RTS	Greenlight	y	n	n
	Lawn Fungicide Granules	Hi-Yield	y	n	n
	Bayleton Systemic Fungicide	Southern Ag	y	n	n
22. **triforine**	RosePride Rose & Shrub Disease Control	Ortho	y	n	n
triforine combination product	Orthenex Garden Insect & Disease control	Ortho	y	n	n
	Orthenex Insect & Disease Control Aerosol	Ortho	y	n	n

Table 3. Index to plant disease control products in Table 2.

Brand	Product name	Active ingredient list	T/O	V	F
Agraquest	Serenade Garden Disease Control	*Bacillus subtilus*	y	y	y
Bayer Advanced	3 in 1 Insect, Disease and Mite Control	tebuconazole + imidacloprid + fluvalinate	y	n	n
	All in One Rose & Flower Care	tebuconazole + imidacloprid	y	n	n
	Azalea, Camelia & Rhododendron Insect and Disease Control	tebuconazole + imidacloprid	y	n	n
	Disease Control for Roses, Flowers and Shrubs	tebuconazole	y	n	n
	Fungus Control for Lawns	triadimefon	y	n	n
Bonide	Bulb Dust	sulfur	n	n	y
	Captan Fruit & Ornamental	captan	y	n	y
	Copper Dust or Spray	copper sulphate	y	y	y
	Copper Liquid Fungicide	copper salts	y	y	y
	Dragoon Dust with Copper	copper sulphate + cabaryl + rotenone	n	y	n
	Fire Blight Spray	streptomycin sulfate	y	n	y
	Fruit Tree Spray	captan + malathion + cabaryl	y	n	y
	Fung-Onil Lawn & Disease	triadimefon	y	n	n
	Fung-Onil Multi Purpose	chlorothalonil	y	y	y
	Garden Dust	copper sulphate + rotenone	y	y	y
	Infuse	propiconazole	y	n	n
	Lime sulfur spray	lime sulfur	y	n	y
	Mancozeb Flowable	mancozeb	y	y	n
	Oil and Lime Sulfur	lime sulfur + horticultural oil	y	n	y
	Remedy	potassium bicarbonate	y	y	y
	Rose Rx	captan + malathion + cabaryl	y	n	n
	Rose Rx 3 in 1	neem oil	y	y	y
	Sulfur Plant Fungicide	sulfur	y	y	y
CSI	Honor Guard PPZ	propiconazole	y	n	n
Dexol	Bordeaux Powder	copper sulphate	y	y	y
Espoma	Earth-tone 3 in 1 Disease Control	sulfur + pyrethrin	y	y	y
Fertilome	Azalea, Camellia, Crape Myrtle Spray	PCNB + malathion	y	n	n
	Blackspot Powdery Mildew Control	copper hydroxide	y	n	n
	Fire Blight Spray	streptomycin sulfate	y	n	y
	Fruit Tree Spray	captan + malathion	n	n	y
	F-Stop	myclobutanil	y	n	n
	Halt Systemic Fungicide	thiophanate methyl	y	n	n
	Landscape & Garden Fungicide	chlorothalonil	y	y	n
	Liquid Systemic Fungicide	propiconazole	y	n	n
	Wettable Dusting Sulphur	sulfur	y	y	y
Garden Safe	Fungicide 3 in 1	neem oil	y	y	y
GardenTech	Daconil Fungicide	chlorothalonil	y	y	y
Garlic GP	Lawn & Turf Fungicide	garlic juice	y	n	n
Greenlight	Fruit Tree Spray	neem oil + pyrethrin + piperonyl butoxide	y	y	y
	Fung-Away Systemic Fungicide	triadimefon	y	n	n
	Fung-Away Systemic Lawn Fungicide Granules	myclobutanil	y	n	n
	Fung-Away Systemic Lawn Fungicide Spray RTS	triadimefon	y	n	n
	Neem Concentrate	neem oil	y	y	y
	Neem II	neem oil + pyrethrin	y	y	n
	Organic Rose & Flower Spray	rosemary oil	y	n	n
	Rose Defense	neem oil	y	n	n
	Systemic Fungicide	thiophanate methyl	y	n	n
	Tomato & Vegetable Spray	neem oil	y	y	y

Table 3. Continued.

Brand	Product name	Active ingredient list	T/O	V	F
Hi-Yield	Bordeaux Mix Fungicide	copper sulphate	y	y	y
	Captan Fungicide 50%WP	captan	y	n	y
	Consan 20	quartenary ammonium compound	y	n	n
	Copper Fungicide	copper hydroxide	y	y	y
	Daconil	chlorothalonil	y	y	n
	Improved Lime Sulphur Spray	lime sulfur	y	n	y
	Lawn Fungicide Granules	triadimefon	y	n	n
	Maneb Garden Fungicide	maneb	y	y	n
	Terraclor Granular Fungicide	PCNB	y	n	n
	Turf & Ornamental Fungicide	PCNB	y	n	n
	Vegetable, Flower, Fruit & Ornamental Fungicide	chlorothalonil	y	y	y
Lilly Miller	Cueva Copper Soap Fungicide	copper salts	y	y	y
	Kop-R-Spray	copper salts	y	y	y
	Multi-purpose Fungicide	sulfur	y	y	y
	Sulfur Dust	sulfur	y	y	y
Monterey	Agri-fos	phosphorous acid salts	y	y	y
	Bi-Carb	potassium bicarbonate	y	y	y
	E-rase RTU	jojoba oil	y	y	y
	Fruit Tree, Vegetable & Ornamental Fungicide	chlorothalonil	y	y	y
	Liqui-cop	copper ammonium complex	y	y	y
	Monterey Aliette	aluminum tris	y	n	n
	Monterey Fungi-fighter	propaconizole	y	n	y
	Monterey M-20	quaternary ammonium compound	y	n	n
Ortho	Garden Disease Control	chlorothalonil	y	y	y
	Orthenex Garden Insect & Disease Control	triforine + acephate + fenbutatin-oxide	y	n	n
	Orthenex Insect & Disease Control Aerosol	triforine + acephate + resmethrin	y	n	n
	RosePride Rose & Shrub Disease Control	triforine	y	n	n
Parkway Research	Consan Triple Action	quaternary ammonium compound	y	n	n
	Paradigm	rosemary oil + clove oil + thyme oil	y	n	n
Safer	3 in 1 Garden Spray	sulfur + potassium fatty acid salts	y	y	y
	Concern Copper Soap Fungicide	copper salts	y	y	y
	Garden Fungicide	sulfur	y	y	y
Scotts	Lawn Fungus Control	thiophanate methyl	y	n	n
Schultz	Fungicide Plus Concentrate	myclobutanil + permethrin	y	n	n
Southern Ag	Bayleton Systemic Fungicide	triadimefon	y	n	n
	Captan Fungicide	captan	y	n	y
	Dithane M-45	mancozeb	y	y	n
	Liquid Copper Fungicide	copper ammonium complex	y	y	y
	Neutral Copper Fungicide	copper sulphate	n	y	y
	Terraclor 75WP	PCNB	y	y	n
Spectracide	Immunox 3 in 1	myclobutanil + permethrin	y	n	n
	Immunox Lawn Disease Control	myclobutanil	y	n	n
	Immunox Multipurpose Fungicide	myclobutanil	y	n	n
	Immunox Plus	myclobutanil + permethrin	y	n	n

Table 4. Companies offering fungicides in small packages.

Manufacturer name	Brand	Web site
AgraQuest, Inc.	Agraquest	*www.agraquest.com*
Bayer Corporation	Bayer Advanced	*www.bayeradvanced.com*
Bonide Products, Inc.	Bonide	*www.bonideproducts.com*
Control Solutions, Inc.	CSI	*www.controlsolutionsinc.com*
Value Garden Supply	Dexol	*www.valuegardens.com*
Espoma Company	Espoma	*www.espoma.com*
Voluntary Purchasing Group, Inc.	Fertilome	*www.fertilome.com*
Spectrum Brands, Inc.	Garden Safe	*www.gardensafe.com*
GardenTech	GardenTech	*www.gardentech.com*
Garlic GP LTD Company	Garlic GP	*www.garlicgp.com*
Green Light Company	Greenlight	*www.greenlightco.com*
Voluntary Purchasing Group, Inc.	Hi-Yield	*www.hi-yield.com*
Lilly Miller Brands	Lilly Miller	*www.lillymiller.com*
Monterey Lawn and Garden Products, Inc.	Monterey	*www.montereylawngarden.com*
The Scotts Miracle-Gro Company	Ortho	*www.ortho.com*
Parkway Research	Parkway Research	*www.parkwayresearch.com*
Woodstream Corporation	Safer	*www.saferbrand.com*
The Scotts Miracle-Gro Company	Scotts	*www.scotts.com*
Spectrum Brands, Inc.	Schultz	*www.schultz.com*
Southern Agricultural Insecticide, Inc.	Southern Ag	*www.southernag.com*
Spectrum Brands, Inc.	Spectracide	*www.spectracide.com*

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M AgriLife Extension Service is implied.

Texas A&M AgriLife Extension Service
AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.

The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.