

PESTICIDE SAFETY AND OTHER PESTICIDE INFORMATION

USE PESTICIDES SAFELY

Dan Horton, Extension Entomologist

Pesticides are biologically active materials applied to kill or disable target pests. If not handled properly, many are also potentially toxic, or even lethal, to non-target plants and animals, including man. Pesticide labels should be carefully followed, as they enable the applicator to use these materials in a fashion that appropriately minimizes the risk of pesticides to human health and the environment.

1. **Apply pesticides only when they are needed.** Properly identify the pest and evaluate whether it will cause enough damage to justify a pesticide application. Your local Extension office can help you identify and evaluate your pest problems.
2. **FOLLOW THE LABEL DIRECTIONS!** Most pesticide accidents are the result of not following the directions, restrictions, and precautions on the label. Avoid the temptation to use greater than the labeled rates; you increase your risk and you may injure or damage the site of application. Additionally, it is illegal to use any pesticide in a manner not prescribed on the label.
3. **Store pesticides safely.** Far too many U.S. households with children under five years old have a pesticide stored within reach of children. Keep pesticides in the original packaging with the label securely affixed. The storage area should be clearly marked and locked if possible. Keep pesticides beyond the reach of children and animals. Never store pesticides with food, feed, or clothing. **NEVER** store pesticides in any food or drink container!
4. **Prevent pesticide drift and runoff.** Never apply pesticide when the wind is blowing more than 5 mph or when rain is imminent. Crops that receive regular pesticide applications should not be planted near bodies of water or near sensitive areas, such as schools or wildlife habitat.
5. **Wear the proper protective clothing.** If you wear the label prescribed protective equipment, your risk from applying pesticides is very small. Wear a hat and eye protection when spraying overhead.
6. **Measure pesticides carefully.** Do not mix more pesticide than you need. It is much easier to use pesticides than to properly and safely dispose of them.
7. **Wash your hands** before you eat, drink, use tobacco, or go to the restroom. Shower as soon as you can, taking care to thoroughly clean your hair and fingernails. Wash the clothes you wore while applying pesticides before wearing them again. Separate your pesticide application garments from regular household laundry, washing them in a separate load.
8. **If you or someone else is exposed to a pesticide, take immediate action.** Remove any contaminated clothing. If pesticide is on the skin, wash immediately. If pesticide is in the eye, rinse with clean water for at least 15 minutes. If pesticide is swallowed, give large amounts of water or milk to drink. **DO NOT** induce vomiting unless the label directs you to. Never give liquids or induce vomiting if a person is unconscious or convulsive. If pesticide is inhaled, move victim to fresh air. Promptly seek medical attention.

Storing the Pesticide

1. Store pesticides in a locked and posted place that is accessible only to qualified personnel. Keep pesticides out of reach of children, unqualified people, or animals.
2. Store pesticides in their original containers with intact labels. **NEVER** place a pesticide in a food or beverage container.
3. Do not store pesticides with food, feed, or seed.

PROTECT HONEY BEES FROM PESTICIDES

Keith S. Delaplane, Extension Entomologist

Many pesticides are hazardous to honey bees. Some are acutely toxic to bees, that is, exposed individuals very often die. Lower doses or exposures may be sub-lethal, but toxic enough to disable the exposed bees. Damage can be minimized if the pesticide user and the beekeeper cooperate and take proper precautions.

The Pesticide User's Role

1. Use pesticides only as needed.
2. Select the least hazardous pesticides that will control the target pest.
3. Use the least hazardous method of application. Granules are usually harmless to honey bees. Sprays drift less than dusts and are less likely to kill bees in nearby areas.
4. Do not apply pesticides when honey bees are active. Applications in late evening or night are least likely to kill bees. Do not apply pesticides when plants are in flower unless it is absolutely necessary.

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS

Dan Horton, John All and Dean Kemp, Entomologists

Always refer to the product label, which is the definitive guide for safe, legal pesticide use. Label precautions are legally binding and they provide for safe, effective use. Certain products may have the same trade name, but different active ingredients.

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
INSECTICIDES					
Amdro Power Flex Home Pest Indoor	zeta-cypermethrin	X	—	—	—
Amdro Power Flex Yard & Perimeter	zeta-cypermethrin	X	X	—	—
Amdro Quick Kill Insect Killer	zeta-cypermethrin	—	X	—	—
Bayer Advanced 12 Month Tree & Shrub Protect & Feed	imidacloprid	—	X	—	—
Bayer Advanced All-In-One Rose & Flower Care	tebuconazole + imidacloprid + clothianidin	—	X	—	—
Bayer Advanced Carpenter Ant & Termite Killer Plus	beta-cyfluthrin	X	X	—	—
Bayer Advanced Complete Insect Dust for Gardens	permethrin	X	—	X	X
Bayer Advanced Complete Insect Killer for Garden R-T-U	carbaryl	—	X	X	X
Bayer Advanced Complete Insect Killer for Soil & Turf	imidacloprid + beta-cyfluthrin	—	X	—	—
Bayer Advanced Dual Action Rose & Flower Insect Killer R-T-U	imidacloprid + beta cyfluthrin	—	X	—	—
Bayer Advanced Fire Ant Killer	beta-cyfluthrin	—	X	—	—
Bayer Advanced Fruits, Citrus & Vegetables Insect Control	imidacloprid	—	—	X	X
Bayer Advanced Home Carpenter Ant and Termite Killer Plus	deltamethrin	X	X	—	—
Bayer Advanced Home Pest Control Indoor & Outdoor Insect	beta-cyfluthrin	X	X	—	—
Bayer Advanced Home Pest Plus Germ Killer	sodium o-phenylphenate + beta-cyfluthrin	X	—	—	—
Bayer Advanced Power Force Carpenter Ant & Termite Killer Plus	deltamethrin	X	X	—	—
Bayer Advanced Rose & Flower Insect Killer	beta-cyfluthrin + imidacloprid	X	X	—	—
Bayer Advanced Season - Long Grub Control Ready- to-Spread Granules	imidacloprid	—	X	—	—
Bayer Advanced Termite Killer	imidacloprid	X	—	—	—
Bayer Advanced Termite Killer Ready-to-Spread Granules	imidacloprid	—	X	—	—
Bayer Advanced Vegetable & Garden Insect Spray	cyfluthrin	X	X	X	—
Bengal Fire Ant Killer Ultra Dust 2X	deltamethrin	X	X	X	X
Bengal Insecticide Concentrate	esfenvalerate	X	—	—	—
Bengal Roach Spray Aerosol	permethrin	X	—	—	—
Black Flag Ant & Roach Killer Aerosol	imiprothren + lambda-cyhalothrin	X	—	—	—
Black Flag Flying Insect Killer	imiprothren + lambda-cyhalothrin	X	X	—	—
Black Flag Fogger & Fogging Insecticide	cyclopropane carboxylate + piperonyl butoxide	exterior	X	X	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
INSECTICIDES (continued)					
Black Flag Fogging Insecticide	resmethrin	X	X	—	—
Black Flag Home Insect Control	deltamethrin	interior, exterior	—	—	—
Bonide Borer-Miner Killer	permethrin	X	X	X	X
Bonide Citrus, Fruit & Nut Orchard Spray	sulfur + pyrethrins	X	X	X	X
Bonide Eight Vegetable, Fruit & Flower	permethrin	X	X	X	X
Bonide Eight Yard & Garden	permethrin	X	X	—	—
Combat Quick Kill Formula 1	fipronil	X	—	—	—
Combat Roach Gel Bait	fipronil	X	—	—	—
Cutter Backyard Bug Control	lambda-cyhalothrin	outdoor	X	—	—
Cutter Backyard Bug Control Outdoor Fogger	terramethrin + phenothrin	X	X	—	—
Cutter Bug Free Backyard One-Step Fogger	tetramethrin + piperonyl butoxide + permethrin	X	—	—	—
Cutter Bug Free Backyard Outdoor Fogger Aerosol	permethrin	—	X	—	—
Cutter Bug Free Backyard Spray Concentrate	permethrin	—	X	—	—
Enforcer Flea Spray for Homes	nylar + permethrin	X	—	—	—
Garden Safe House Plant & Garden Insect Spray	pyrethrins + canola oil	X	X	X	X
Garden Safe Insect Killer Fruit & Vegetable	pyrethrin	X	X	X	X
Garden Safe Insect Killer Rose & Flower	pyrethrin	X	X	—	—
Garden Tech Over 'n Out Fire Ant Killer	bifenthrin	—	X	—	—
GardenTech Sevin Bug Killer	carbaryl	—	X	X	X
GardenTech Sevin-5 Dust	carbaryl	X	X	X	X
Green Light Borer Killer	permethrin	X	X	X	X
Green Light Conquest Insecticide Concentrate	permethrin	X	X	X	X
Green Light Fire Ant Dust	deltamethrin	X	X	—	—
Green Light Fruit Tree Spray	pyrethrins + piperonyl butoxide + hydrophdoic extract of neem oil	—	—	—	X
Green Light Roach, Ant & Spider Control	deltamethrin	X	X	—	—
Harris Home Pest control Stink Bug Killer also Kudzu Bugs	deltamethrin	X	—	—	—
Hot Shot Bedbug & Flea Fogger	pyrethrins + piperonyl butoxide + benzeneacetate	X	—	—	—
Hot Shot Bedbug & Flea Home Insect Killer	permethrin	X	—	—	—
Hot Shot Bedbug & Flea Killer	prallethrin + gamma-cyhalothrin	X	—	—	—
Hot Shot Flying Insect Aerosol	permethrin + d-trans allethrin	X	—	—	—
Hot Shot Fogger with Odor Neutralizer	tetramethrin + permethrin	X	—	—	—
Hot Shot Home Insect Control Clear Formula	lambda cyhalothrin	X	—	—	—
Hot Shot Kitchen Bug Killer Botanical (aerosol)	pyrethrins + piperonyl butoxide	X	—	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

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INSECTICIDES (continued)					
Hot Shot MaxAttrax Roach Killing Powder with Boric Acid	orthoboric acid	X	—	—	—
Hot Shot No-Mess Fogger	tetramethrin + permethrin + piperonyl butoxide	X	—	—	—
Hot Shot No-Pest Strip Kills Flying & Crawling Insects	dichlorvos	X	—	—	—
Hot Shot Pest Control Concentrate	cypermethrin	X	—	—	—
Hot Shot Roach & Ant Killer (aerosol)	prallethrin + lambda-cyhalothrin	X	—	—	—
Hot Shot Spider & Scorpion Killer	prallethrin + lambda-cyhalothrin	X	—	—	—
Hot Shot Spider Killer Water-based Non-staining	prallethrin + lambda-cyhalothrin	X	X	—	—
Hot Shot Ultra Ant & Roach Killer Aerosol	imiprothrin + lambda-cyhalothrin	X	—	—	—
Mosquito Bits	<i>Bacillus thuringiensis</i>	X	X	—	—
No-Pest Ant & Roach Killer Aerosol	d-trans allethrin + lambda-cyhalothrin	X	—	—	—
No-Pest Home Insect Control	lambda-cyhalothrin	X	X	—	—
No-Pest Wasp & Hornet Killer aerosol	prallethrin + lambda cyhalothrin	X	X	—	—
Off Backyard Pretreat Fogger Outdoor	prallethrin + cyfluthrin	X	yard area	—	—
Off Bug Control Backyard Pretreat	lambda-cyhalothrin	X	X	X	—
Ortho Ant-B-Gon Dust	permethrin	X	X	X	X
Ortho Bug-B-Gon Insect Killer – Lawns, Gardens	bifenthrin + zeta-cypermethrin	X	X	X	X
Ortho Bug-B-Gon MAX Garden & Landscape Insect Killer	esfenvalerate	X	X	X	X
Ortho Bug-B-Gon MAX Garden Insect Dust	permethrin	X	—	X	X
Ortho Bug-B-Gon MAX Insect Killer For Lawns Granules	bifenthrin	X	X	X	—
Ortho Bug-B-Gon MAX Lawn & Garden Insect Killer 1	bifenthrin	X	X	X	X
Ortho Bug-B-Gon Multi-Purpose Garden Dust 1	permethrin	X	X	X	X
Ortho Bug-B-Gon Multi-Purpose Insect Killer Ready-To-Use	esfenvalerate	X	X	X	X
Ortho EcoSense Brand Insecticidal Soap	potassium salts of fatty acids	X	X	X	X
Ortho EcoSense Brand Outdoor Insect Killer	pyrethrins + canola oil	X	X	X	
Ortho Fire Ant Killer Mound Treatment	bifenthrin	X	X	—	—
Ortho Flower, Fruit, Vegetable Insect Killer	acetamiprid	—	X	X	X
Ortho Home Defense Bedbug Killer Aerosol	cyclopropanecarboxylate + bicycloheptene	X	—	—	—
Ortho Home Defense Max	bifenthrin + zeta-cypermethrin	exterior barrier	X	—	—
Ortho Home Defense Max Granules	bifenthrin	X	—	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
INSECTICIDES (continued)					
Ortho Home Defense MAX Indoor & Outdoor Insect Killer 5	bifenthrin	X	X	—	—
Ortho Home Defense Max Termite & Destructive Bug Killer	hexaflumuron	X	—	—	—
Ortho Malathion Plus Insect Spray Concentrate	malathion	—	X	X	X
Ortho MAX Ant & Roach Killer Aerosol	bifenthrin	X	—	—	—
Ortho MAX Fire Ant Killer Broadcast Granules	bifenthrin	—	X	—	—
Ortho MAX Flower, Fruit, & Vegetable Insect Killer	acetamiprid	—	X	X	X
Ortho MAX Flying Insect Killer Aerosol	tetramethrin + phenothrin	—	—	—	—
Ortho MAX Garden & Landscape Insect Killer	esfenvalerate	—	X	X	X
Ortho MAX Hornet & Wasp (aerosol) Killer	tetramethrin, sumithrin, cyclopropanecarboxylate	—	X	—	—
Ortho MAX Indoor Insect Fogger	pyrethrins + permethrin	X	—	—	—
Ortho MAX Lawn & Garden Insect Killer 1	bifenthrin	exterior	X	X	X
Ortho MAX Tree & Shrub Insect Control	imidacloprid	—	X	—	—
Ortho Orthene Fire Ant Killer	acephate	—	X	—	—
Ortho Ortho-Klor Termite and Carpenter Ant Killer	bifenthrin	X	X	—	—
Ortho Rose & Flower Control Plus Miracle-Gro	imidacloprid	—	X	—	—
Ortho Rose & Flower Insect Killer	acetamiprid	X	X	—	—
Ortho Rose & Flower Insect Killer 1	bifenthrin	—	X	—	—
Ortho Rose Pride Insect Killer	acetamiprid	—	X	—	—
Ortho RTU Houseplant & Garden Insect Killer	bifenthrin	—	X	—	—
Ortho Volck Oil Spray	dormant horticultural oil	—	X	—	X
Pointer Insecticide	imidacloprid	—	X	—	—
Pre-Strike Mosquito Torpedo	methoprene	exterior	X	—	—
Raid Ant & Roach Aerosol	imiprothrin + cypermethrin	X	—	—	—
Raid Concentrated Deep Roach Fogger	cypermethrin	X	—	—	—
Raid Flying Insect	d-phenothrin + prallethrin	X	X	—	—
Raid Flying Insect Aerosol	permethrin + tetramethrin + d-trans allethrin	X	—	—	—
Raid Fumigator	permethrin	X	—	—	—
Raid Max 2-Way Roach Spray (aerosol)	imiprothrin + deltamethrin	X	—	—	—
Raid Max Bug Barrier Indoor/Outdoor	deltamethrin	X	X	—	—
Raid Max Concentrated Deep Roach Fogger	cypermethrin	X	—	—	—
Raid Wasp & Hornet (aerosol)	tetramethrin + permethrin	X	X	—	—
Raid Yard-Guard Mosquito Fogger	permethrin + d-cis/trans allethrin	—	X	—	—
Real Kill Ant & Roach Killer (aerosol)	d-trans allethrin + lambda- cyhalothrin	X	—	—	—
Real Kill Ant Killer Aerosol 2	d-trans allethrin + lambda- cyhalothrin	X	—	—	—

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INSECTICIDES (continued)					
Real Kill Flea Fogger Indoor	pyrethrins +piperonyl butoxide	X	—	—	—
Real Kill Home Insect Control Indoor & Outdoor	lambda-cyhalothrin	X	X	—	—
Real Kill Home Insect Control Indoor & Outdoor Insect Killer	cyfluthrin	X	—	—	—
Real Kill Indoor Fogger	cypermethrin	X	—	—	—
Real Kill Wasp & Hornet Fogger	d-trans allethrin + lambda-cyhalothrin	X	X	—	—
Schultz Houseplant & Garden Insect Spray	permethrin	X	X	X	X
Scotts Outdoor Defense Insect Killer	permethrin	—	X	—	—
Spectracide Ant Shield Home Barrier Granules	lambda-cyhalothrin	exterior barrier	X	—	—
Spectracide Ant Shield Home Barrier Insect Killer	permethrin + lambda-cyhalothrin	—	X	—	—
Spectracide Ant Shield Outdoor Killing Stakes	indoxacarb		X	—	—
Spectracide Bug & Weed Killer for Lawns	dimethylmine salt + gamma-cyhalothrin	—	X	—	—
Spectracide Bug Stop for Gardens	permethrin	—	X	X	X
Spectracide Bug Stop Home Barrier	gamma-cyhalothrin	X	—	—	—
Spectracide Bug Stop Indoor/Outdoor Home Insect Control	lambda-cyhalothrin	X	X	—	—
Spectracide Carpenter Ant & Carpenter Bee Killer	deltamethrin	X	—	—	—
Spectracide Carpenter Bee & Ground Nesting Yellow Jacket Killer	prallethrin + lambda-cyhalothrin	X	X	—	—
Spectracide Commercial Wasp & Hornet Killer Aerosol	tetramethrin + permethrin + piperonyl butoxide	X	—	—	—
Spectracide Fire Ant Killer Granules Mound Destroyer	lambda-cyhalothrin	—	X	—	—
Spectracide Fire Ant Killer Ready-to-Use Dust	permethrin	—	X	—	—
Spectracide Japanese Beetle Insect Control Foliage Spray	lambda-cyhalothrin	—	X	—	—
Spectracide Japanese Beetle Insect Fogger	deltamethrin + S-bioallethrin	—	X	—	—
Spectracide Malathion Insect Spray	malathion	X	X	X	X
Spectracide Pro Wasp & Hornet Killer	tetramethrin + permethrin + piperonyl butoxide	X	—	—	—
Spectracide Terminate Termite & Carpenter Ant Killer Concentrate	lambda cyhalothrin	X	X	—	—
Spectracide Terminate Termite & Carpenter Ant Killing Dust	disodium octaborate tetrahydrate	X	—	—	—
Spectracide Terminate Termite Detection & Killing Stakes	sulfuramid	—	X	—	—
Spectracide Terminate Termite Killing Foam Aerosol	tralomethrin + d-trans allethrin	X	X	—	—
Spectracide Termite Killing Foam	prallethrin + lambda-cyhalothrin	X	—	—	—
Spectracide Triazicide Brand Lawn & Garden Insect Killer	lambda-cyhalothrin	X	X	X	—

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INSECTICIDES (continued)					
Spectracide Triazicide Insect Killer for Lawns Granules	gamma-cyhalothrin	—	X	—	—
Spectricide Triazicide Insect Killer – Lawns & Landscapes	gamma-cyhalothrin	—	X	X	X
Spectracide Triazicide Once & Done! Insect Killer 2 Conc. for Lawn	gamma-cyhalothrin	X	X	X	X
Spectracide Triazicide Once & Done! Insect Killer for Lawn & Landscape	lambda cyhalothrin	—	X	X	—
Spectracide Triazicide Once & Done! Insect Killer Granules	lambda cyhalothrin	X	X	—	—
Spectracide Wasp & Hornet Killers Aerosol	prallethrin + lambda cyhalothrin	X	X	—	—
Stinger Nosquito Octenol Lure	1-octen-3-ol	exterior	X	—	—
Summit Mosquito Dunks	<i>Bacillus thuringiensis</i>	X	X	—	—
Terminix Ultimate Protection Stinging Insect Killer	geraniol	X	X	—	—
SunSpray Ultra-Fine Pest Oil	verdant (summer) horticultural oil	—	X	X	X
Terro Ant Killer Outdoor	permethrin	X	X	—	—
Terro Ant Killer Plus Outdoor Shaker Bag	lambda-cyhalothrin	—	X	—	—
Terro Spider Killer Aerosol	pyrethrins + deltamethrin	X	—	—	—
Total Kill Lawn & Garden Insect Killer Concentrate	permethrin	X	X	X	X
Total Kill Lawn & Garden Insect Killer Granules	bifenthrin	X	X	X	—
Total Kill Wasp & Hornet Killer (aerosol)	tetramethrin + sumithrin	X	—	—	—
Ultra-Kill Wasp & Hornet Killer	prollethrin + lambda-cyhalothrin	X	X	—	—
Ultra-Kill Ant & Roach Killer (aerosol)	d-trans allethrin + lambda-cyhalothrin	X	X	—	—
Ultra-Kill Home Insect Killer	lambda-cyhalothrin	X	—	—	—
COMBINATION INSECTICIDE AND FUNGICIDE PRODUCTS					
Bayer Advanced All-in-One Rose and Flower Care Concentrate	tebuconazole + imidacloprid	—	X	—	—
Bonide Fruit Tree Spray	captan + malathion + carbaryl	—	X	—	X
Bonide Insecticide-Miticide Fungicide	captan + malathion + carbaryl	—	X	—	X
Green Light Rose Defense II	neem + pyrethrin	—	X	X	X
Ortho Econsense Brand 3-in-1 Rose & Flower Care	sulfur + pyrethrin	—	X	X	X
Ortho Elements 3-in-1 Rose & Flower Care	sulfur + pyrethrins	X	X	X	X
Ortho Orthenex Garden Insect & Disease Control Concentrate	resmethrin + funginex + orthene	—	X	—	—
Ortho Rose & Flower Insect & Disease Control	acetamiprid + triticonazole	X	X	—	—
Spectracide Immunox Plus Insect & Disease Control	permethrin + myclobutanil	—	X	—	—

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COMBINATION INSECTICIDE, FUNGICIDE, AND MITICIDE PRODUCTS (continued)					
Bayer Advanced 3-in-1 Insect, Disease, & Mite Control	imidachloprid + tau -fluvalinate + tebuconazole	X	X	—	—
CONTACT MITICIDES					
Ortho Isotox Insect Killer Formula IV Concentrate	acephate + fenbutatin-oxide	—	X	—	—
SunSpray Ultra-Fine Pest Oil	verdant (summer) horticultural oil	X	X	X	X
BAIT INSECTICIDES					
Amdro Ant Bait Stations	hydramethylnon	X	X	—	—
Amdro Ant Block Home Perimeter Ant Bait	hydramethylnon	—	X	—	—
Amdro Fire Ant Bait	hydramethylnon	—	X	—	—
Amdro Firestrike Fire Ant Bait	hydramethylnon	—	X	—	—
Amdro Kills Ants & Roaches Gel Bait	hydramethylnon	X	X		
Amdro Roach Block Home Perimeter Roach Bait	hydramethylnon	X	—	—	—
Combat Ant Killing Bait Strips	fipronil	X	—	—	—
Combat Ant-Killing Gel	fipronil	X	—	—	—
Combat Platinum Brand Roach Killing Gel	fipronil	X	—	—	—
Combat Roach Killing Bait Strip	fipronil	X	—	—	—
Combat Source Kill Max Ant Gel Bait	fipronil	X	—	—	—
Combat Source Kill Max Roach Bait Station	fipronil	X	—	—	—
Garden Tech Over'n Out Fire Ant Killer Granules	fipronil	—	X	—	—
Garden Tech Over'n Out! Fire Ant Killer Mound Treatment	indoxacarb	—	X	—	—
Grant's Kills Ants Ant Stakes	arsenic trioxide + propoxur	X	X	—	—
Hot Shot Max Attrax Roach Bait	chlorpyrifos	X	—	—	—
Hot Shot Max Attrax Ant Bait Station	indoxacarb	X	—	—	—
Hot Shot Max Attrax Ultra Brand Nest Destroyer Roach Bait Station	indoxacarb	X	—	—	—
Hot Shot Nest Destroyer Roach Bait Station	indoxacarb	X	—	—	—
Hot Shot Ultra Clear Roach & Ant Gel Bait	dinotefuran	X	—	—	—
Hot Shot Ultra Liquid Ant Bait Station	dinotefuran	X	—	—	—
Hot Shot Ultra Liquid Roach Bait	dinotefuran	X	—	—	—
Logic	fenoxycarb	X	—	—	—
Ortho Ant-B-Gon Bait	propoxur	X	X	—	—
Ortho Ecosense Fire Ant Bait Granules	spinosad	X	X	X	X
Raid Ant Baits III	avermectin B1	X	—	—	—
Raid Double Control Roach Baits	abamectin	X	—	—	—
Raid Max Double Control Large Roach Baits	avermectin B1	X	—	—	—

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BAIT INSECTICIDES (continued)					
Raid Outdoor Ant Spikes	avermectin	X	X	X	X
Real-Kill Ant Bait Stations	indoxacarb	X	X	—	—
Real-Kill Ant Bait	indoxacarb	X	—	—	—
Spectracide Fire Ant Killer Plus Preventer	pyriproxyfen	X	X	—	—
Spectracide Fire Ant Killer Plus Preventer Bait Once & Done!	indoxacarb	—	X	—	—
Spectracide Terminate Termite Detection & Killing Stakes	hexaflumuron	X	—	—	—
Terro Ant Killer Liquid Ant Baits	sodium tetraborate decahydrate (borax)	X	—	—	—
Terro Liquid Ant Baits Outdoor	borax	X	—	—	—
BAIT RODENTICIDES					
CAUTION: RODENTICIDES ARE HIGHLY TOXIC TO ALL MAMMALS, TO INCLUDE PETS AND HUMANS. USE ANY RODENTICIDE WITH GREAT CARE and PRECISE ADHERENCE TO LABEL INSTRUCTIONS.					
d-Con Bait Pellets Kills Mice & Rats	brodifacoum	X	—	—	—
Enforcer Rat Bait	indandione	X	X	—	—
Farnam Just One Bite II Bait Chunks	bromadiolone	X	X		
No-Pest Rat & Mouse All Weather Bait Bars	bromethalin	X	—	—	—
Ortho Home Defense Max No Touch Bait Station	chlorophacinone	X	—	—	—
Ortho Max-Home Defense No Touch Bait Blocks – mice, rats	difethialone	X	—	—	—
Ortho Max-Home Defense No Touch Bait Paste Packs	difethialone	X	—	—	—
Real Kill Rat & Mouse Killer Weather Bars Bait	bromethalin	X	—	—	—
Real-Kill Rat & Mouse Killer Pellets (also Place Packs)	bromethalin	X	X	—	—
Sweeney's No Mess Mouse Paste Bait	difethialone	X	—	—	—
Tom Cat Vitamin D3 Mouse Poison Bait Trays	cholecalciferol	X	—	—	—
Tomcat Mole Killer Worm Shaped Baits	bromethalin	—	X	—	—
Tomcat Mouse & Rat Killer Bait Stations	bromethalin	X	—	—	—
Tomcat Ultra All-Weather Block Bait	brodadiolone	X	—	—	—
Tomcat Ultra Pelleted Bait (kills mice & rats)	brodadiolone	X	—	—	—
Victor Kills Mice! Mouse Bait Packs (pellets)	brodadiolone	X	—	—	—
d-Con Ultra Set Mouse Trap	trap	X	—	—	—
d-Con, No View, No Touch Mouse Trap	no toxin	X	—	—	—
Havahart Live Animal Cage Trap	non toxic	X	X	X	X
Havahart Raccoon Trap	mechanical	X	X	—	—
Havahart Squirrel Trap	mechanical	X	X	—	—
Ortho Home Defense Max Kill & Contain Mouse Trap	mechanical	X	—	—	—
Ortho Home Defense Max Press 'N Set Mouse Trap	mechanical	X	—	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
VARMINT TRAPS					
Real Kill Household Pest Glue Boards	adhesive trap	X	—	—	—
Real Kill Large Glue Traps for Rats & Mice	non toxin	X	—	—	—
Sweeney's Mole Trap	mechanical trap	—	X	—	—
Tomcat Glue Traps for Mice	adhesive trap	X	—	—	—
Tomcat Live Mouse Traps	live trap	X	—	—	—
Tomcat Mouse Attractant Gel for Traps	non toxic	X	—	—	—
Tomcat Rat & Mouse Snap Traps	trap	X	—	—	—
Tomcat Wooden Mouse Traps	kill trap	X	—	—	—
Victor Electronic Mouse Trap	no toxin	X	—	—	—
Victor Mice Trap	no toxin	X	—	—	—
Victor Power Kill Rat Trap	no toxin	X	—	—	—
Victor Snap Mouse Trap	non toxic	X	—	—	—
Victor Snap Rat Trap	non toxic	X	—	—	—
INSECT TRAPS AND ATTRACTANTS					
Black Flag Fly Paper	—	X	—	—	—
Black Flag Fly Trap Disposable	—	X	X	—	—
Black Flag Mosquito	octenol lure	X	X	—	—
Black Flag Pantry Pest Trap	proprietary components	X	—	—	—
Mosquito Magnet Trap Octenol Biting Insect Attractant	1-octen-3-ol, octenol	exterior	X	—	—
Mosquito Octenol Lure	1-octen-3-ol	X	X	—	—
Mosquito 2 in 1 Power Bait	1-octen-3-ol + lactic acid	X	X	—	—
No Squito Mosquito Octenol Lure	1-octen-3-ol	outdoors	—	—	—
Raid Disposable Yellow Jacket Trap	plant-based attractant	X	X	—	—
Rescue Disposable Fly Trap	no toxin	X	X	—	—
Rescue Reusable Fly Trap	sucrose + egg solids + yeast + trimethylamine + indole	X	X	—	—
Rescue Yellow Jacket Trap	attractant, no pesticide	X	X	X	X
Rescue Yellow Jacket Trap Attractant & Trap	non-toxic	X	X	—	—
Safer The Pantry Pest	lure	X	—	—	—
Spectracide Bag-A-Bug Japanese Beetle Trap	eugenol + geraniol	X	X	X	X
Stinger Bug Zapper Bulbs	UVB4S + UV40	X	X	—	—
Stinger Insect Killer	bug zapper	—	X	—	—
Stinger Nosquito Power Bait	octenol + lactic acid	X	X	—	—
Tomcat Pest Glue Boards	adhesive trap	X	—	—	—
Victor Fly Catcher Sticky Roll	no toxin	X	—	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
INSECT REPELLENTS					
Bonide Mosquito Beater	citronella + garlic + geranium + cedar + lemongrass oils	X	X	—	—
Bug Band Insect Repellant Band	geraniol	on person outside	—	—	—
Cutter Backwoods Insect Repellent	deet	X	—	—	—
Cutter Backwoods Mosquito Wipes	deet	X	—	—	—
Cutter Citro Guard Candle	oil of citronella	X	—	—	—
Cutter Dry Insect Repellent	deet	X	X	—	—
Cutter Lemon Eucalyptus Insect Repellent	oil of lemon + eucalyptus	X	—	—	—
Cutter Scented Candles	citronella oil	X	X	—	—
Cutter Skinsations Insect Repellent	deet	X	—	—	—
Enoz Moth Ball Packets	paradichlorobenzene	X	—	—	—
Enoz Moth Bar Cedar Scented	paradichlorobenzene	indoor	—	—	—
Enoz Old Fashioned Moth Balls	naphthalene	X	—	—	—
Garden Accents Citronella Candle	citronella oil	X	X	—	—
Green Light Yard Safe Insect Repellent Granules	cedar oil	—	X	X	—
Liquid Fence Yard Net Granular Insect Repellant	citronella oil + cedar wood oil + lemongrass oil + sodium lauryl sulfate + peppermint oil + potassium sorbate + eugenol + geraniol	X	X	—	—
Off Active Insect Repellen	deet	X	X	—	—
Off Clip On	metofluthrin	X			
Off Deep Woods Dry	deet	on person	—	—	—
Off Deep Woods Spray	deet	X	—	—	—
Off Mosquito Coil	chrysanthemate	X	—	—	—
Off Power Pad Lamp/Lantern	d-cis-trans allethrin	X	X	—	—
Off Tabletop Candle	citronella oil	X	X	—	—
Repel 100 Insect Repellent	deet	X	X	—	—
Scotts Insect Repellent Granules	cedar oil	—	X	X	X
Swamp Gator All Natural Insect Repellant	geraniol + soybean oil + peppermint + rosemary + geranium oil	on person	—	—	—
Therma Cell Mosquito Repellent	allethrin	exterior	X	—	—
Therma Cell Mosquito Repellent Patio Lantern	allethrin	exterior	X	—	—
Tiki Citronella Candles	citronella oil	X	—	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
VARMINT REPELLENTS					
Black & Decker Electronic Pest Repellers	no toxin	X	—	—	—
Bonide Shot-Gun Repels-All Animal Repellent R-T- U	dried blood + putrescent whole egg solids + garlic oil	—	X	—	—
Cutter Advanced Light & Clean	picaridin	X	—	—	—
Dr. T's Nature Products Mole Out Mole Repelling Granules	castor oil	—	X	—	—
Dr. T's Nature Products Snake-A-Way Snake Repelling Granules	naphthalene sulfur	X	X	—	—
Exhart Gopher & Mole Mover	electronic deterrent	—	X	—	—
Havahart – Caring Control for Pets & Wildlife Get Away Granules	methyl nonyl ketone	—	X	—	—
Havahart Critter Ridder Granular	oil of black pepper + piperine + capsaicinoids	X	X	—	—
Havahart Critter Ridder Ready to Use Liquid	oil of black pepper + piperine + capsaicinoids	—	X	—	—
Havahart Deer Off	putrescent whole egg solids + capsaicinoids + garlic	—	X	X	X
Liquid Fence Deer & Rabbit Repellant	putrescent whole egg solids + garlic + sodium lauryl sulfate + potassium sulfate + thyme oil	X	X	X	X
Liquid Fence Dog & Cat Repellant	citronella oil + eugenol + garlic oil + sodium lauryl sulfate + cinnamon oil + geraniol	X	X	X	X
Pestocator 2000 Plus Ultrasonic Rodent Repellent	no toxins	X	—	—	—
Repellex Systemic Tablets Mammals	capsaicin	—	X	—	—
Spectracide Mole Stop Spray Concentrate	castor oil + soybean oil	—	X	X	X
Sweeney's All Out Deer & Rabbit Repellent	capsaicin + garlic oil + butyl mercaptan	—	X	X	X
Sweeney's All Season Deer Repellent	dried blood	—	X	X	X
Sweeney's Mole & Gopher Repellent Lawn Protection	castor oil	—	X	—	—
Sweeney's Solar Powered Sonic Spike (for moles, gophers)	sonic pulse	—	X	—	—
Terracycle Natural Ingredient Deer Repellent Spray	whole egg solids + peppermint oil + clove oil + cinnamon oil + white pepper	—	X	X	X
Victor Pest Chaser High Frequency Sound	non toxic	X	—	—	—
Worryfree Outdoor Dog, Cat, & Bird Repellent Granules (organic)	white pepper + peppermint oil+ thyme oil	—	X	X	X

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
FUNGICIDES					
Armcarb 100®	potassium bicarbonate	—	X	X	X
Banner Maxx	propiconazole	—	X	—	—
Bayer Advanced Fungus Control for Lawns	propiconazole	—	X	—	—
Bayer Advanced Garden Rose, Flowers & Shrubs Disease Concentrate	tebuconazole	—	X	—	—
Bonide Captan	captan	—	X	—	X
Ferti-Lome Halt Systemic Rose, Flower, Lawn, Ornamental Fungicide	thiophanate-methyl	—	X	—	X
Garden Tech Daconil Fungicide Ready-To-Use	chlorothalonil	—	X	X	X
Green Light Fung-Away Systemic Fungicide	bayleton	—	X	—	nuts
Green Light Fung-Away Systemic Lawn Fungicide	myclobutanil	—	X	—	—
Green Light Fung-Away Systemic Lawn Spray	bayleton	—	X	—	nuts
Green Light Powdery Mildew Killer	neem oil	—	X	X	—
Hi-Yield American Brand Copper Fungicide	copper hydroxide	—	X	X	X
Kaligreen Potassium Bicarbonate Soluble Powder	potassium bicarbonate	X	X	X	X
Monterey Aliette	aluminum tris (O-ethyl phosphonate)	—	X	—	—
Monterey E-rase RTU	jojoba oil	—	X	X	X
Ortho Garden Disease Control	chlorothalonil	—	X	X	X
Ortho Max Garden Disease Control	chlorothalonil	—	X-	X	X
Ortho Rose & Flower Disease Control	triticonazol	—	X	—	—
Ortho Rose Pride Disease Control	triforine	—	X	—	—
Ortho Rose Pride Rose & Shrub Disease Control Concentrate	funginex	—	X	—	—
Remedy	potassium bicarbonate	—	X	X	X
Safer Flower, Fruit And Vegetable Garden Fung. RTU	sulfur	—	X	X	X
Scott's Lawn Fungus Control	thiophanate-methyl	—	X	—	—
Southern Ag Liquid Copper Fungicide	copper ammonium complex	—	X	—	—
Spectracide Immunox Lawn Disease Control	myclobutanil	—	X	X	X
BACTERICIDES					
Agri-mycin	streptomycin sulfate	—	X	X	X
Bonide Fire Blight Spray	streptomycin sulfate	—	X	—	X
Bonide Mancozeb Flowable with Zinc	mancozeb	—	X	X	X
Lime-sulfur	lime-sulfur	—	X	—	X

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
MOLLUSCICIDES (slugs and snails)					
Bayer Advanced Dual Action Snail & Slug Killer Bait	iron phosphate	—	X	X	X
Deadline Bug Bait	metaldehyde	—	X	X	—
Green Light Bug and Snail Bait	carbaryl + metaldehyde	X	X	X	X
Ortho Bug-Geta Snail & Slug & Insect Killer	metaldehyde + carbaryl	—	X	X	X
Ortho Ecosense Brand Slug & Snail Killer Granule	iron phosphate	X	X	X	X
Sluggo	iron phosphate	X	X	X	X
HERBICIDES					
Amdro Power Flex Lawn Weed & Grass Killer	glyphosate	X	X	X	—
Amdro Power Flex Lawn Weed Killer	2,4-D + mecoprop-p + dicamba	X	X	—	—
Balan	benefin	—	X	—	—
BASF Vantage	sethoxydim	—	X	X	X
Bayer Advanced All-in-One Lawn Weed & Crabgrass Killer 1	2,4-D + quincloroc + dicamba + dimethylamine salt	—	X	—	—
Bayer Advanced All-in-One Weed Killer	MSMA + 2,4-D + MCPP + dicamba	—	X	—	—
Bayer Advanced Bermudagrass Control for Lawns R-T-U	fenoxyprop-p-ethyl	—	X	—	—
Bayer Advanced Dura Zone Weed & Grass Killer	indaziflam + diquat dibromide + glyphosate	X	—	—	—
Bayer Advanced Power Force Brush Killer Plus	triclopyr	—	X	—	—
Bayer Advanced Southern Season Long Weed Control for Lawns	2,4-D + isoxaben + MCPP + dicamba	—	X	—	—
Bayer Advanced Southern Weed Killer for Lawns	2,4-D + MCPP + dicamba	—	X	—	—
Bonide Kleen Up Grass & Weed Killer	glyphosate + acifluorfen	—	X	—	—
Bonide Kleen Up Plus	glyphosate + oxyfluorfen	X	X	—	—
Bonide Total Vegetation Killer	prometon	X	—	—	—
Enforcer Brush Killer	triclopyr	X	—	—	—
Enforcer Next Day Grass & Weed Killer	diquat (or cacodylic acid, read label)	—	X	—	—
Enforcer Weed Shot Lawn Weed Killer	2,4-D + MCPP + dicamba	—	X	—	—
Gallery	isoxaben	—	X	—	—
Garden Place Grass & Weed Killer	diquat + fluazifop	—	X	—	—
Goal	oxyfluorfen	—	X	X	—
Green Light Amaze Grass & Weed Preventer	benefin + oryzalin	—	X	—	—
Green Light Bermudagrass Killer	fluazifop	—	X	—	—
Green Light Betasan 3.6 Granules	betasan	—	X	—	—
Green Light Com-Pleet	prometon	X	X	X	—
Green Light Com-Pleet Systemic Grass and Weed Killer	glyphosate	—	X	—	—
Green Light MSMA Crabgrass Killer 2	monosodium methanearsonate	—	X	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
HERBICIDES (continued)					
Green Light Portrait Broadleaf Weed Preventer	isoxaben	—	X	—	—
Green Light Wipe-Out Broadleaf Weed Killer	2,4-D + MCPP + dicamba	—	X	—	—
Green Light Wipe-Out Crabgrass Killer Plus Concentrate	2,4-D + quinclorac + dicamba	—	X	—	—
Halts	pendimethalin	—	X	—	—
HDX Weed & Grass Killer	glyphosate	X	X	—	—
Hi-Yield Killzall	glyphosate	—	X	—	—
Image Brush & Vine Killer	triclopyr	X	X	—	—
Image for St. Augustine & Centipede Grass – Kills Weeds	atrazine	—	X	—	—
Image Herbicide Kills Crabgrass	sulfentrazone + quinclorac	—	X	—	—
Image Kills Crabgrass with MSMA	MSMA	—	X	—	—
Image Kills Nutsedge	ammonium salt of imazaquin	—	X	—	—
Image Year-Long Vegetation Killer – Kills Grass & Weeds	dichlobenil	exterior	—	—	—
LESCO Pre-M Plus	pendimethalin	—	X	—	—
Miracle-Gro Shake n Feed plus Weed Preventer	trifluralin	X	X	—	—
Monsanto Manage	halosulfuron	—	X	—	nuts
Monsanto Roundup	glyphosate	—	X	X	X
Ortho Brush-B-Gon Poison Ivy Killer RTU	triclopyr	X	—	—	—
Ortho Elementals Lawn Weed Killer	Iron HEDTA	—	X	—	—
Ortho Grass-B-Gone Garden Grass Killer	fluazifop-p-butyl	—	X	—	—
Ortho Grass-B-Gone Grass Killer for Landscapes RTU	fluazifop	—	X	—	—
Ortho Ground Clear, No Weeds	glyphosate	patios, paths, sidewalks	—	—	—
Ortho Ground Clear Vegetation Killer	glyphosate, imazapyr	exterior	X	—	—
Ortho Max Poison Ivy & Tough Brush Killer	triclopyr	—	X	—	—
Ortho Max Season-Long Weed & Grass Killer + Preventer	glyphosate + oxyfluorfen	exterior	X	X	X
Ortho Nutsedge Killer for Lawns	sulfentrazone	—	X	—	—
Ortho Total Kill Lawn Weed Killer	dimethylamine salt of 2,4-D + dimethylamine salt of mecoprop-p + dimethylamine salt of dichlorprop-p	—	X	—	—
Ortho Total Kill Weed & Grass Killer	glyphosate + pelargonic acid	—	X	—	—
Ortho Weed-B-Gon Chickweed, Clover & Oxalis Killer	triclopyr	—	X	—	—
Ortho Weed-B-Gon Lawn Weed Killer 2 Concentrate	2,4-D + MCPP + dicamba	—	X	—	—
Ortho Weed-B-Gon Max Plus Crabgrass Control	quinclorac + mecoprop-p + 2,4-D + dicamba	—	X	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
HERBICIDES (continued)					
Preen	trifluralin	—	X	X	X
Preen Southern Weed Preventer	dithiopyr	—	X	—	—
Round Up Extended Control Weed & Grass Killer + Weed Preventer	glyphosate + imazapic + diquat dibromide	exterior	X	—	—
Round Up Poison Ivy & Tough Brush Killer Plus	glyphosate + triclopyr	exterior	X	—	—
Round Up Pro	glyphosate	X	—	—	—
Round Up Sure Shot Foam Weed & Grass Killer	glyphosate + pelargonic acid	X	—	—	—
Round Up Weed & Grass Killer	glyphosate + polargonic acid	X	—	—	—
Round Up Weed & Grass Killer	glyphosate + diquat dibromide	X	—	—	—
Scotts Liquid Turf Builder with Plus 2 Weed Control	2,4-D	—	X	—	—
Shoot Out Weed & Grass Killer	glyphosate + isopropylamine salt	—	X	—	—
Snapshot	triflan + isoxaben	—	X	—	—
Spectracide Brush Killer	2,4-D + MCPP + dicamba	—	X	—	—
Spectracide Systemic Grass & Weed Killer 2	diquat + fluazifop	—	X	—	—
Spectracide Total Vegetation Killer	prometon	X	—	—	—
Spectracide Triple Strike Grass, Weed, Root Killer	diquat dibromide + fluazifop-p-butyl + dicamba	exterior	X	—	—
Spectracide Weed & Grass Killer	diquat dibromide + fluazifop-p-butyl + dicamba + dimethylamine salt	exterior	X	—	—
Spectracide Weed & Grass Killer with Extended Control	diquat dibromide + fluazifop-p-butyl + dicamba + oxyfluorfen	X	X	—	—
Spectracide Weed Stop Weed Killer for Lawns & Crabgrass Killer	2,4-D + MCPP + dicamba quinclorac + sultentrazone	—	X	—	—
Sta-Green Phos-Free Crab-Ex Plus Crabgrass Preventer Plus Fert 30-0-5	dithiopyr	—	X	—	—
Sta-Green Weed & Feed R-T-U	2,4-D	—	X	—	—
Team	benefin + trifluralin	—	X	—	—
Total Kill by Ortho Weed & Grass Killer Ready To Use	glyphosate	paths	X	X	X
Ultra Kill Weed & Grass Killer	glyphosate	exterior	X	X	X
Vigoro Ultra Turf Lawn Weed Control	2,4-D + MCPP + dicamba	—	X	—	—
Vigoro Weed & Feed	2,4-D + MCPP + DCPD	—	X	—	—
Vigoro Weed Stop Crabgrass & Weed Preventer	dithiopyr	—	X	—	—
XL2G	benefin + oryzalin	—	X	—	—
HERBICIDES (MOSS AND ALGAE CONTROL)					
Bayer Advanced 2-in-1 Moss & Algae Killer R-T-U	potassium soap of fatty acids	X	X	—	—
Image Brush & Vine Killer	triclopyr + triethylamine salt	—	X	—	—
Lilly Miller Moss Out	ferrous sulfate	—	X	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
ORGANIC PESTICIDE PRODUCTS, ACTIVE INGREDIENT, AND USES					
ORGANIC INSECTICIDES					
Azadirachtin	leaf extracts from the neem tree	X	X	X	X
Bayer Advanced Natria Insecticidal Soap	potassium salts	X	X	X	X
Bayer Advanced Natria Multi-Insect Control	canola oil	X	X	X	X
Bayer Advanced Natria Rose & Flower	sulfur + pyrethrins	X	X	X	—
Bonide All Seasons Spray Oil – Horticultural & Dormant	petroleum oil	X	X	X	X
Bonide Bug & Slug Killer	iron phosphate + spinosad	—	X	X	X
Bonide Captain Jacks Deadbug	spinosad	—	X	X	X
Bonide Garden Dust	copper + rotenone	—	X	X	X
Cutter Natural Insect Repellent	geraniol + soybean oil + potassium sorbate + SLS	on person	X	—	—
Diatomaceous earth	fossilized bodies of diatoms	X	X	X	X
Doom, Milky Spore Disease	<i>Bacillus popilliae</i>	—	X	—	—
EcoSmart Organic Garden Insect Killer	rosemary + peppermint + thyme + clove oils	—	X	X	X
EcoSmart Organic Home Pest Control	z-phenethyl propionate + clove oil + rosemary oil + peppermint oil + thyme oil	X	—	—	—
EcoSmart Organic Insect Killer	2-phenethyl propionate + sodium lauryl sulfate + eugenol + thyme oil + sesame oil	X	X	—	—
EcoSmart Organic Insect Repellent	geraniol + rosemary + cinnamon + lemongrass oils	on person	—	—	—
EcoSmart Organic Insecticide Flying Insect Killer	peppermint oil + cinnamon oil + sesame oil	X	X	—	—
EcoSmart Organic Insecticide Mosquito & Tick Control	2-phenethyl propionate + sodium lauryl sulfate + peppermint oil + rosemary oil + eugenol + thyme oil + sesame oil	exterior	X	—	—
EcoSmart Organic Insecticide Mosquito Fogger	geraniol + rosemary + peppermint oils	X	—	—	—
Ferti-Lome ‘Come and Get It’ Fire Ant Killer	spinosad	X	X	X	X
Ferti-Lome Borer, Bagworm, Leafminer & Tent Caterpillar Spray	spinosad	—	X	X	X
Garden Safe Bt Worm & Caterpillar Killer	<i>Bacillus thuringiensis</i>	X	X	X	X
Garden Safe Crawling Insect Killer	silicon dioxide	X	X	X	X
Garden Safe Insect Killer	pyrethrin	X	X	X	X
Garden Safe Insect Killer Insecticidal Soap	potassium salts	X	X	X	X
Garden Safe Multi -Purpose Garden Insect Killer	pyrethrin + pyperonyl butoxide	X	X	X	—
Gardens Alive Bulls Eye Bioinsecticide	spinosad	—	X	X	X

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
ORGANIC PESTICIDE PRODUCTS, ACTIVE INGREDIENT, AND USES (continued)					
ORGANIC INSECTICIDES (continued)					
Gardens Alive Surround at Home Crop Protectant	kaolin clay	—	—	X	X
Green Light BT Worm Killer	<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>	—	X	X	X
Green Light Roach Powder	boric acid	X	—	—	—
Green Light Rose Defense	neem oil	—	X	X	X
Greenlight Home & Garden Insect Spray	thyme oil + clove oil + sesame oil	X	X	X	X
Hot Shot Natural Ant & Roach Killer	lemongrass oil	X	—	—	—
Hot Shot Natural Flying Insect Killer	lemongrass oil	indoor	—	—	—
Hot Shot Natural Home Insect Control	lemongrass oil + potassium sorbate	X	—	—	—
Mosquito Dunks, Mosquito Bits by Summit	<i>Bacillus thuringiensis</i> subspecies <i>israelensis</i>	X	—	—	—
Neem	oil extracted from neem tree nuts	—	X	X	X
Nematodes	nematodes that attack select insect species	—	X	X	X
Organocide Organic Insecticide & Fungicide & Miticide	sesame oil	X	X	X	X
Ortho Ant & Roach Killer Aerosol (100% natural)	soybean oil	X	—	—	—
Ortho Ecosense Brand Indoor Insect Killer	soybean oil	X			
Ortho Home Insect Killer (100% natural)	soybean oil	X	—	—	—
Pyrethrin products	chemical from chrysanthemum flowers	X	X	X	X
Safer Ant & Crawling Insect Killer	diatomaceous earth	X	X	X	X
Safer Ant & Roach Killer	D-limonene + pyrethrins + potassium salts of fatty acids	X	—	—	—
Safer Caterpillar Killer	<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>	—	X	X	—
Safer Fire Ant Bait R-T-U	spinosad	—	X	X	—
Safer Flying Insect Killer	d-limonene + pyrethrins + salts of fatty acids	X	—	—	—
Safer Insect Killing Soap	potassium salts of fatty acids	X	X	X	X
Safer Roach & Ant Killing Powder	boric acid + German cockroach pheromone	X	—	—	—
Safer Tomato & Vegetable Insect Killer II	insecticidal soap + pyrethrin	—	X	X	X
Safer Wasp & Hornet Killer	D-limonene + pyrethrins + potassium salts of fatty acids	X	—	—	—
Spectracide Garden Insect Killer R-T-U	pyrethrins + piperonyl butoxide	—	X	X	X
SunSpray Ultra-Fine Pest Oil	verdant (summer) horticultural oil	X	X	X	X
Terminix Ultimate Protection Crawling Insect Control	geraniol + cinnamon oil	indoor	—	—	—
Terminix Ultimate Protection Flying Insect Killer	geraniol	indoor	—	—	—

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
ORGANIC PESTICIDE PRODUCTS, ACTIVE INGREDIENT, AND USES (continued)					
ORGANIC COMBINATION INSECTICIDES, FUNGICIDES AND MITICIDES					
Bayer Advanced Natria Insect, Disease & Mite Control	sulfur + pyrethrins	—	X	X	X
Bayer Advanced Natria Neem Oil for Insect, Disease & Mite Control	neem oil	—	X	X	X
Bonide Rose Rx 3 in 1 Insecticide, Fungicide, Miticide	neem oil	X	X	X	X
Bonide Tomato & Vegetable Insect, Fungicide, Miticide	sulfur + pyrethrins	—	X	X	X
Greenlight Neem Concentrate Insecticide, Fungicide, Miticide	clarified hydrophobic extract of neem oil	X	X	X	X
Safer 3-in-1 Garden Spray II - kills: fungus, mites, insects	potassium salts of fatty acids + sulfur	—	X	X	X
Southern Ag Triple Action Neem Oil Insecticide, Fungicide, Miticide	neem oil	X	X	X	X
ORGANIC MITICIDES					
SunSpray Ultra-Fine Pest Oil	verdant (summer) horticultural oil	X	X	X	X
ORGANIC FUNGICIDES					
Bonide Copper Fungicide	copper octanoate	—	X	X	X
Bordeaux mixture	copper sulfate + lime + water	—	X	X	X
Concern Copper Soap Fungicide	copper octanoate	X	X	X	X
Copper	copper salts	—	X	X	X
Garden Safe Fungicide	neem oil	X	X	X	X
Garden sulfur	sulfur	—	X	X	X
Gardens Alive Serenade	<i>Bacillus subtilis</i> strain QST 713	—	—	X	X
Greenlight Blossom-End Rot Spray	calcium + chlorine	—	—	X	—
Lime-sulfur	calcium polysulfide	—	X	—	X
Odo Ban Germ Control Earth Choice Fungicide Virucide	silver + citric acid	X	—	—	—
Organocide Organic Insecticide & Fungicide	sesame oil	X	X	X	X
Ortho Ecosense Garden Disease Control	copper octanoate	—	X	X	X
ORGANIC MOLLUSCICIDES					
Bonide Bug & Slug Killer	iron phosphate + spinosad	—	X	X	X
Garden Safe Slug & Snail Bait	iron phosphate	—	X	X	X
Monterey Sluggo	iron phosphate	—	—	X	—
Worryfree Slug & Snail Bait	iron phosphate	—	X	X	X

COMMON PESTICIDE PRODUCTS AVAILABLE FOR HOMEOWNERS (continued)

PRODUCTS	ACTIVE INGREDIENT	INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES & PATHS	FLOWERS, SHRUBS, TREES, LAWNS	VEGE- TABLES	FRUIT
ORGANIC PESTICIDE PRODUCTS, ACTIVE INGREDIENT, AND USES (continued)					
ORGANIC HERBICIDES					
Bayer Advanced Natural Grass & Weed Killer	ammoniated soap	patios, paths	—	—	—
Concern Weed Prevention Plus	corn gluten meal	—	X	X	—
EcoSmart Organic Weed & Grass Killer	2-phenethyl propionate + eugenol + sodium lauryl sulfate	X	X	—	—
Garden Safe Weed & Grass Killer	ammoniated soap of fatty acids	exterior	X	—	—
Nature's Glory Weed & Grass Killer	acetic acid	X	—	—	—
St. Gabriel Laboratories Bumout	clove oil	X	X	—	—
St. Gabriel Laboratories Premerge	corn gluten meal	—	X	—	—

CALIBRATION OF BACKPACK SPRAYERS 1000 Ft² Method

Gary L. Hawkins, Extension Engineer
Glen C. Rains, Extension Engineer

Backpack sprayers are often used to treat ornamental or small areas of turf. Herbicide recommendations are based amount per acre and amount per 1000 ft². Regardless of the type of sprayer used to apply herbicides, the speed, pressure and nozzle height must be kept constant for accurate application. The backpack sprayer may require some modification so that it is better suited for application. A pressure gauge mounted on the tank side of the shutoff valve will allow continuous monitoring of the tank pressure, which must remain uniform. Optimum pressure control can be achieved by inserting a pressure regulator between the pressure gauge and nozzle. To prevent dripping after the shutoff valve is closed, use a quick, positive pressure shutoff valve or a strainer with a check valve. Nozzle clogging, a problem associated with the use of wetttable powders (as well as dry flowable [DF] and water dispersible granules [WDG] formulations) can be reduced by inserting a 50 mesh in-line strainer and keeping the solution constantly agitated. The following is a procedure of 1000 ft².

Step 1. Measure the length and width of the test area to be sprayed. Then calculate the area to be covered.

Test Area is: length _____ ft X width _____ ft = _____ ft²

Step 2. Fill sprayer with water and spray the test area. Record the amount of water to refill the sprayer.

Volume (ounces) per test area _____

Step 3. Find the label rate of material to be applied per 1000 ft² .

Rate _____ per 1000 ft²

Step 4.
$$\frac{1000 \text{ ft}^2 \times \text{Volume (ounces) per test area}}{\text{Test Area (ft}^2)} = \text{Volume (ounces) per 1000 ft}^2$$

Step 5. Calculate the area covered per tank as follows:

$$\frac{\text{Tank volume (ounces) x 1000 ft}^2}{\text{Volume per 1000 ft}^2} = \text{Area covered per tank (ft}^2)$$

Step 6. Calculate amount of material to add to tank.

$$\frac{\text{Area per tank (ft}^2) \times \text{Label rate per 1000 ft}^2}{1000} = \text{Amount to add (rate units)}$$

Solutions derived from the above may need to be converted to a smaller unit in order to accurately measure the pesticide accurately. The following conversion will help simplify this problem.

Conversions:

Volume		Weight	
gallon x 128	= fluid ounces (fl oz)	pounds x 16	= weight ounces (wt oz)
pints x 16	= fluid ounces (fl oz)	wt. ounces x 28.35	= grams (g)
fl oz x 29.57	= milliliters (ml)	grams x 1000	= milligrams (mg)
gallon x 4	= quarts (qts)		
quarts x 2	= pints (pts)		
fl oz x 2	= Tablespoons (Tbs)		
tsp x 3	= Tablespoons (Tbs)		
tsp x 5	= milliliters (ml)		

An example of using this conversion chart. If the rate calls for 0.25 gallons of material then converting to ounces would be done as follows: 1 gallon has 128 ounces, so multiply 0.25 gallons by 128 to get 32 ounces. So, you would need to measure out 32 ounces for your application. The same thing for a weight. If you need 0.25 pounds, then multiply 0.25 by 16. This is calculated as 0.25 pounds times 16 to get 4 weight ounces of material.

CALIBRATING TURFGRASS SPRAYERS (Gallons per 1000 ft²)

Gary L. Hawkins, Extension Engineer
Glen C. Rains, Extension Engineer

Low-pressure boom sprayers are used frequently for applying chemicals on large areas such as golf courses and recreational areas. Application rates for turf are normally given in gallons per 1000 sq ft. Calibrating a boom sprayer is not as difficult as it sounds. Calibrate your sprayer often to compensate for nozzle wear, pump wear and speed changes.

Calibrate with clean water. Check uniformity of nozzle output across the boom. Collect from each for a known time period. Each nozzle should be within 10 percent of the average output. Replace with new nozzles if necessary. When applying materials that are appreciably different from water in weight or flow characteristics, such as fertilizer solutions, etc., calibrate with the material to be applied. Exercise extreme care and use protective equipment when active ingredient is involved.

Step 1. Determine the Effective Swath Width (W) per Nozzle

For boom spraying, the effective spray width of each nozzle (W) is equal to the distance in inches between two nozzles.

Step 2: Determine Travel Speed (MPH)

To determine the travel speed, measure a known distance. Use fence posts or flags to identify this distance. A distance over 200 feet and a tank at least half full are recommended. Travel the distance determined at your normal spraying speed and record the elapsed time in seconds. Repeat this step and take the average of the two measurements. Use the following equation to determine the travel speed in miles per hour:

$$\text{Travel Speed (MPH)} = \frac{\text{Distance (feet)} \times 0.68}{\text{Time (seconds)}}$$

(0.68 is a constant to convert feet/second to miles/hour)

Step 3. Determine Nozzle Flow Rate (GPM)

With the sprayer parked, operate the sprayer at the same pressure level and catch the output from each nozzle in a measuring jar for one minute (or collect output for half a minute and then double the ounces collected) to determine the nozzle flow rate in ounces per minute (OPM) Then, convert the final average output in OPM to gallons per minute (GPM) using the following equation:

$$\text{GPM} = \text{OPM}/128 \text{ (1 Gallon} = 128 \text{ ounces)}$$

Step 4. Determine the Actual Application Rate in Gallons per 1000 sq ft

Use the following equation to determine the gallons per acre application rate:

$$\text{Gallons per 1000 ft}^2 = \frac{136 \times \text{gpm (per nozzle)}}{\text{MPH} \times W}$$

GPM: average nozzle flow rate in gallons per minute

MPH: travel speed in miles per hour

W: distance between two nozzles in inches

136 a constant to convert units to gallons per 1000 ft²

Step 5. Calculate the area covered per tank as follows:

$$\frac{\text{Tank Volume (gallons)} \times 1000}{\text{Application Rate (gallons per 1000 ft}^2)} = \text{Area covered per tank (ft}^2)$$

Step 6. Calculate amount of material to add to tank.

$$\frac{\text{Area covered per tank (ft}^2) \times \text{Material rate per 1000 ft}^2}{1000} = \text{Amount to add (rate units)}$$

HAND SPRAYER CALIBRATION FOR ORNAMENTAL AND TURF

Gary L. Hawkins, Extension Engineer
Glen C. Rains, Extension Engineer

Hand sprayers are often used to treat ornamental or small areas of turf. The directions on many ornamental pesticide product labels say to “spray until foliage is wet” or perhaps “spray until runoff.” Unfortunately, these directions are subject to each applicator’s interpretation of what “wet” or “runoff” is.

Recommendations are based on amount per 100 gallons. This is the dilution ratio for the chemical applied. Use the following to convert 100 gallon rate to bed area rate.

1. Measure the length and width of the area to be sprayed. Then calculated the area to be covered.

Bed Area is: length _____ X width _____ = _____ ft²

2. Fill sprayer with water and spray the area. Record the amount of water to refill the sprayer.

Gallons per bed area _____

3. Obtain the rate of material to be applied per 100 gallons.

Rate _____

$$4. \quad \frac{\text{Rate} \times \text{Gallons per bed area}}{100} = \text{Amount per bed area}$$

5. Calculate the total amount of material to be used for the application (total bed area) as follows:

$$\frac{\text{Amount per bed area} \times \text{Area to be sprayed}}{\text{Bed area (ft}^2\text{)}} = \text{Amount of material}$$

6. Total solution to prepare is:

$$\frac{\text{Gallons per bed area} \times \text{Area to be sprayed (ft}^2\text{)}}{\text{Bed area (ft}^2\text{)}} = \text{Total Solution}$$

Solutions derived from the above may need to be converted to a smaller unit in order to accurately measure the pesticide. Refer to the conversion section to help simplify this problem.

Conversions:

Volume		Weight	
gallon x 128	= fluid ounces (fl oz)	pounds x 16	= weight ounces (wt oz)
pints x 16	= fluid ounces (fl oz)	wt. ounces x 28.35	= grams (g)
fl oz x 29.57	= milliliters (ml)	grams x 1000	= milligrams (mg)
gallon x 4	= quarts (qts)		
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fl oz x 2	= Tablespoons (Tbs)		
tsp x 3	= Tablespoons (Tbs)		
tsp x 5	= milliliters (ml)		

An example of using this conversion chart. If the rate calls for 0.25 gallons of material then converting to ounces would be done as follows: 1 gallon has 128 ounces, so multiply 0.25 gallons by 128 to get 32 ounces. So, you would need to measure out 32 ounces for your application. The same thing for a weight. If you need 0.25 pounds, then multiply 0.25 by 16. This is calculated as 0.25 pounds times 16 to get 4 weight ounces of material.

ATTENTION! PESTICIDE PRECAUTIONS

1. Observe all directions, restrictions and precautions on pesticide labels. It is dangerous, wasteful and illegal to do otherwise.
2. Store all pesticides in original containers with labels intact and behind locked doors. “KEEP PESTICIDES OUT OF THE REACH OF CHILDREN.”
3. Use pesticides correct label dosages and intervals to avoid illegal residues or injury to plants and animals.
4. Apply pesticides carefully to avoid drift or contamination of non-target areas.
5. Surplus pesticides and containers should be disposed of in accordance with label instructions so that contamination of water and other hazards will not result.
6. Follow directions on the pesticide label regarding restrictions as required by State and Federal Laws and Regulations.
7. Avoid any action that may threaten an Endangered Species or its habitat. Your county extension agent can inform you of Endangered Species in your area, help you identify them, and through the Fish and Wildlife Service Field Office identify actions that may threaten Endangered Species or their habit.

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Specific insects, diseases, and weeds are found by the plants or crop with which they are associated. For example, aphids on peanuts are found by looking under “peanut insect control” and turning to the page indicated. Pests of animals are found by looking under the animal with which they are associated. Household, structural, public health, recreational pests and vertebrate pests are found by looking up the specific pest.

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