

Over-the-Counter Pesticides and Alternatives

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Pesticides are useful to society because of their ability to kill potential disease-causing organisms and control insects, weeds, and other pests. Conversely, many pesticides also create some risk of harm to humans, animals, or the environment because they are designed to kill or otherwise adversely affect living organisms. Just because a pesticide is considered organic or “natural”, does not mean that exposure to it is considered safe. All pesticides should be treated with care and used judiciously.

Pesticides Defined

A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, mice and other animals, weeds, fungi, or microorganisms like bacteria and viruses. Under United States law, a pesticide is also any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

Integrated Pest Management (IPM)

IPM is a multidisciplinary approach to coping with pest problems. IPM uses chemical, cultural, biological, and mechanical methods to manage pests below economic or other predefined thresholds. A sound understanding of host biology, environmental effects on hosts and pests, and benefits and costs of management alternatives are important components of IPM. In the home garden or landscape, it also implies tolerance of some pest damage and successful IPM relies on using multiple pest management strategies.

The steps followed in an IPM approach are: (1) identification the pest species; (2) understanding the biology of the pest (life cycle, feeding habits, natural enemies, etc.); (3) monitor and determine damage thresholds; (4) select and apply the right combination of management strategies to effectively reduce the pest population while causing the least harm to yourself, others, non-target organisms, and the environment; (5) monitor and evaluate to determine pest management effectiveness.

Pesticide Labels

The pesticide label provides valuable information about the proper handling, use (application rates, methods, and acceptable environmental conditions), potential risks a pesticide may pose, and instructions on how to minimize or avoid those risks. By reading the label you can also learn how to possibly achieve better management using less pesticide thereby reducing costs. Every pesticide applicator has the responsibility to read and follow the label information so no harm will result from misuse or mishandling of the pesticide.

Before you purchase any pesticide, you should consider the following:

- What is the active ingredient in the pesticide?
- What are the target pests and will the pesticide give adequate management?
- Are there alternative methods of pest management available?
- Can the pesticide be applied safely and legally given the conditions in which you are working?
- What are the necessary application rates and suggested safety equipment (PPE)?

- How much pesticide is needed for the application? You should buy only what you need.
- Could pesticides pose problems for children, pets, non-target plants, insect and animals in the area?

You should always compare different pesticide labels, because several different products may manage the same pest. A comparison of the labels and product prices will help you select the product that manages the pest and is less toxic and/or less expensive.

Material Safety Data Sheets (MSDSs)

Specific information about pesticide toxicity to humans and other non-target organisms can be found on the product's MSDS. Specifically, the MSDS contains first aid measures, how to clean up a spill, storage, personal protection, physical and chemical properties, reactivity with other compounds, toxicological information (including LD₅₀), ecological information, disposal considerations, and other information. Manufacturers must create an MSDS for each pesticide they sell. MSDSs are usually available online and should also be available by request at the place of purchase. It is recommended that users read the MSDS for any product used.

Pesticide Toxicity

LD₅₀ (Lethal Dose₅₀) is the amount of a substance that, when administered by a defined route of entry (e.g. oral or dermal) over a specified period of time, is expected to cause the death of 50% of a defined animal population. The units of LD₅₀ are parts per million (ppm) or milligrams/kilogram. A quicker and less technical way to indicate pesticide toxicity is through the *signal word*. The words CAUTION, WARNING, and DANGER, POISON are used to quickly define a pesticide's relative toxicity (see Table 1).

Table 1. Relative comparison of pesticide toxicity using signal words, oral LD₅₀, and probable adult human dose.

Toxicity Category	Signal Words	Oral LD ₅₀	Probable Lethal Adult Human Dose
Highly Toxic	DANGER, POISON may also have skull and crossbones displayed	0 to 50	a few drops to 1 teaspoon
Moderately Toxic	WARNING	50 to 500	1 to 2 teaspoons
Slightly Toxic	CAUTION	500 to 5,000	1 ounce to 1 pint (or pound)
Almost Non - Toxic	CAUTION	more than 5,000	1 ounce to 1 pint (or pound)

Food Quality Protection Act

In July 1996, Congress passed the Food Quality Protection Act (FQPA) of 1996 (Public Law 104-170) and the President signed the legislation on August 3. This Act amends the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA) in ways that change the regulation of pesticides in this country.

To date, the FQPA has affected gardeners by eliminating the pesticides chlorpyrifos (Dursban and Lorsban) and diazinon from home and garden use. Other pesticides commonly used by home gardeners are likely to be eliminated in the future. These may include malathion, acephate (Orthene), dimethoate, carbaryl (Sevin), chlorothalonil, and many others. This will create a need for new products and pest management alternatives.

Least Toxic Pesticides

Least toxic pesticides cause few injuries to people and organisms other than the target pest. Least toxic insecticides should be a first choice when deciding to use pesticides. Least toxic pesticides include: botanicals, inorganics, dusts (DE), soaps, oils, microbial compounds, and biologicals. Use caution when handling these materials because they can be toxic or dangerous to humans if misused. Always check product labels to be sure the pesticide is registered for your plant or pest situation.

Before Using Pesticides

Always read the label: before mixing, before applying, before cleanup, and before disposal. Correct pest identification is critical because label instructions may vary for management of different pest species with the same product. Some plant species can be adversely affected by certain pesticides. Other pesticides are temperature sensitive and can volatilize (moving with the breeze and affecting areas a great distance from where they were applied). These are all good reasons to read the label completely.

Garden insecticides have different effects on a given insect family or species. This is largely dependent on feeding behaviors, reproductive potential, host plant biology, and many other factors. Chewing insects are most susceptible to insecticides that act as stomach poisons. Piercing and sucking insects are often managed with contact and/or systemic insecticides. You should try to choose an insecticide that has the greatest effect on the target pest and little or no effect on beneficial and benign insects.

Herbicides can be selective or non-selective (affecting broadleaf and not grasses or visa-versa). In addition, herbicides can kill plants through direct contact or be translocated within the plant to kill them systemically. Herbicides may also have pre-emergent (before seed germination) or post-emergent activity. Finally, some herbicides are soil sterilants that prevent plant growth altogether, and these are not recommended for residential use.

Fungicides can be very expensive, especially the new formulations. Very few of the newer products are broad spectrum. Again, correct identification is critical.

Rodenticides and molluskicides are often poison-laced baits. These products should be used carefully to avoid harm or death to non-target organisms. Correct bait placement or the use of bait stations is critical.

Pesticides Available

Garden centers often have a wide range of pesticide products available. Some hardware stores and grocery stores also sell garden as well as household pesticides. Consumers are also asking for natural or organic alternatives to synthetic pesticides. As stated above, I encourage all consumers to compare products by looking at active ingredients. The following tables contain pesticide found on the shelves in October, 2015.

Caution Regarding Neonicotinoids

Neonicotinoids are insecticides made to mimic nicotine. Nicotine is naturally found in many plants, including tobacco, and is toxic to insects. Imidacloprid is a widely used neonicotinoid used to manage sucking insects, termites, some soil insects, and fleas on pets. It has been used in products sold in the United States since 1994. In recent years, imidacloprid (and other neonicotinoids) has been implicated as a potential contributor to the worldwide decline in honeybee populations called Colony Collapse Disorder (CCD). In 2011, the USDA said no single factor alone is responsible for CCD, however honey bees are thought to be affected by neonicotinoid chemicals existing as residues in the nectar and pollen which bees forage on. Research in this area is ongoing. Meanwhile, pesticide applicators and home gardeners should try to limit neonicotinoid use on crops which attract honeybees (and other pollinators) and time their applications to minimize honeybee exposure.

Internet Resources for Pesticide Information

Pesticide Label Information

Crop Protection Reference (agricultural labels and MSDSs)

<http://www.greenbook.net/>

Pesticide Labels and MSDS – Crop Data Management Systems Inc.

<http://www.cdms.net>

University-based Pesticide Information

Oregon State University

<http://ace.orst.edu/info/nptn/gen.htm>

University of Nebraska-Lincoln

<http://pested.unl.edu/>

Alternatives to Pesticides

Northwest Coalition for Alternatives to Pesticides

<http://www.pesticide.org>

Insecticides / Miticides / Larvicides / Fungicides



(See next section for “3-in-1” products)

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word							Notes
			Conventional	Least Toxic	Insecticide	Miticide	Larvicide	Fungicide	
2-butoxyethanol w/ myclobutanil	<ul style="list-style-type: none"> • Spectracide Immunox Fungus & Disease Control for Lawns 	Caution						X	
acephate	<ul style="list-style-type: none"> • Orthene Fire Ant Killer • Ortho Orthene Systemic Insect Control 	Caution	X		X				
azadirachtin	<ul style="list-style-type: none"> • Azamax Insecticide, Miticide, Nematicide • Safer BioNeem Insecticide & Insect Repellent 	Caution		X	X				Contact and growth regulator for insects
bacillus popilliae	<ul style="list-style-type: none"> • St Gabriel Organics Milky Spore 	Caution		X	X				
bacillus subtilis	<ul style="list-style-type: none"> • Natria Disease Control 	Caution		X				X	
bacillus thuringiensis (Bt)	<ul style="list-style-type: none"> • DiPel • Garden Safe Bt Worm & Caterpillar Killer • Monterey Bt • Thuricide Bt Caterpillar Control 	Caution		X			X		Stomach poison to larval stages of many insects depending on variety
bacillus thuringiensis israelensis (Bti)	Gnatrol	Caution		X			X		Controls fungus gnat larvae
bifenthrin	<ul style="list-style-type: none"> • Bug-B-Gon • Hi-Yield Bug Blaster • Green Thumb Garden & Home Insect Control • Ortho Fire Ant Killer • Ortho Home Defense Insect Killer 	Caution	X		X				Synthetic pyrethroid
borax	<ul style="list-style-type: none"> • Terro Ant Killer • Terro Liquid Ant Baits 	Caution			X				

Insecticides / Miticides / Larvicides / Fungicides



(See next section for “3-in-1” products)

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word							Notes
			Conventional	Least Toxic	Insecticide	Miticide	Larvicide	Fungicide	
canola oil	Miracle Gro Natures Care Garden Insect Control	Caution		X	X	X			
capsaicin	Hot Pepper Wax Insect Repellent	Caution		X	X	X			Indoor and outdoor
canola oil	Miracle Gro Natures Care Garden Insect Control	Caution		X	X	X			
captan	Hi-Yield Captan 50W Fungicide	Warning	X					X	
carbaryl	Sevin	Caution	X		X				Stomach poison for chewing insects; works by ingestion and contact
chlorothalonil	• Garden Tech Daconil Fungicide	Caution	X					X	
copper octanoate (copper soap)	• Bonide Liquid Copper Fungicide • Miracle Gro Nature's Care Garden Disease Control	Caution		X				X	Leaf spots, powdery mildew, downy mildew
cottonseed oil clove oil garlic oil	• Safer Gro Pest Out	Caution		X	X	X			
cyfluthrin	• Bayer Advanced Rose and Flower Insect Killer	Caution	X		X				Wide range insecticide with contact and stomach poison properties
deltamethrin	• Bayer Delta Dust • Bonide Spider Killer • Greenlight Many Purpose Dust • Raid Max Bug Barrier	Caution	X		X				• Synthetic pyrethroid • Bonide Spider Killer labeled for indoor & outdoor
diatomaceous earth	• Perma Guard Household Insecticide	Caution		X	X				Makes a barrier and desiccates insects that contact it
diazinon	No longer available	Caution	X						
dicofol	• Hi-Yield Kelthane	Caution	X			X			
d-Limonene	• Orange Guard	Caution		X	X				(steam-distilled by product of citrus peels)

Insecticides / Miticides / Larvicides / Fungicides



(See next section for “3-in-1” products)

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word	Conventional	Least Toxic	Insecticide	Miticide	Larvicide	Fungicide	Notes
gamma-cyhalothrin	<ul style="list-style-type: none"> Spectracide Bug Stop Spectracide Triazicide 	Caution	X		X				
extract of neem oil	<ul style="list-style-type: none"> 70% Neem Oil (Monterey) 	Caution		X				X	Effective on powdery mildew, black spot, downy mildew, anthracnose, rust, leaf spot, botrytis, needle rust, scab and flower, twig and tip blight, and alternaria
geraniol & soybean oil, Rosemary oil, peppermint oil, geranium oil	<ul style="list-style-type: none"> Swamp Gator Natural Insect Repellent Repel Natural Insect Repellent 	Caution		X	X				Deet-free
geranium oil (organic)	<ul style="list-style-type: none"> Greenway No Powdery Mildew 	Caution		X				X	For powdery mildew, use carefully as phytotoxicity can result
halofenozide	<ul style="list-style-type: none"> Natural Guard Grub Control (locally sold?) Hi-Yield Kill-A-Grub 	Caution	X				X		Replacement for diazinon in turf
hydramethylnon	<ul style="list-style-type: none"> Amdro Ant Block 	Caution	X		X				Ants (harvester ants, fire ants)
imidacloprid	<ul style="list-style-type: none"> Bayer Advanced Rose & Flower Care 2 in 1 Feeds & Protects Bayer Complete Insect Killer for Soil & Turf Bayer Fruit, Citrus & Vegetable Insect Control Bayer Merit Bayer Termite Killer Hi-Yield Systemic Insect Spray 	Caution	X		X		X		Soil pests (e.g. white grubs), plant pests (e.g. aphids, thrips, scale insects), structural pests (e.g. termites, carpenter ants)
imidacloprid w/ B-cyfluthrin	<ul style="list-style-type: none"> Bayer Advanced Complete Insect Killer Bayer advanced Rose & Flower Insect Killer 	Caution	X		X				

Insecticides / Miticides / Larvicides / Fungicides



(See next section for “3-in-1” products)

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word	Conventional	Least Toxic	Insecticide	Miticide	Larvicide	Fungicide	Notes
imidacloprid w/ clothianidin	<ul style="list-style-type: none"> Bayer Tree and Shrub Protect & Feed 	Caution	X		X				
imiprothrin & lamda cyhalothrin	<ul style="list-style-type: none"> Black Forest Ant and Roach Killer 	Caution	X		X				
kaolin	<ul style="list-style-type: none"> Surround 	Caution		X					
lamda-cyhalothrin	<ul style="list-style-type: none"> Cutter Backyard Bug Control Hot Shot Bed Bug & Flea Spectracide Termite & Carpenter Ant Killer 	Caution	X		X				
lemongrass oil & potassium sorbate	<ul style="list-style-type: none"> Cutter Natural Bug Control 	Caution		X	X				
lemon grass oil w/ garlic oil, peppermint oil	<ul style="list-style-type: none"> Dr T's Mosquito Repelling Granules 	Caution		X	X				
malathian	<ul style="list-style-type: none"> Hi-Yield 55% Malathion Spectracide Malathion 	Caution	X		X				
myclobutanil	<ul style="list-style-type: none"> Spectracide Immunox Multipurpose Fungicide 	Caution	X					X	

Insecticides / Miticides / Larvicides / Fungicides



(See next section for “3-in-1” products)

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word							Notes
			Conventional	Least Toxic	Insecticide	Miticide	Larvicide	Fungicide	
nosema locustae	Nolo Bait	Caution		X	X				Grasshopper bait that contains a protozoan parasite
paenibacillus popilliae *	• St. Gabriel Organics Milky Spore	Caution		X				X	Grub control for lawns *Formerly Bacillus popilliae
paraffinic oil	• Hi-Yield Dormant Spray	Caution	X		X				
permethrin	• Bonide Termite and Carpenter Ant Killer • Hi-Yield Garden, Pet, & Livestock Dust • Hi-Yield Indoor/Outdoor Broad Use Insecticide • Hi-Yield Turf, Termite & Ornamental Insect Control	Caution Warning		X	X				
petroleum oil	• Scalecide, Oil Spray, Supreme Oil, Horticultural Oil	Caution	X		X	X			Scales, over wintering mite eggs, aphids
pipernoyl butoxide & pyrethrins	• Garden Safe Multi-purpose Garden Insect Killer	Caution			X				Inside and outside
potassium carbonate	• Green Cure Fungicide	Caution							
potassium salt of fatty acids	• Garden Safe Insecticidal Soap Insect Killer • Safer End ALL Insect Killer • Safer Insect Killing Soap	Caution		X	X	X			Kills on contact
propiconazole	• Spectracide Immunox Fungus Plus Insect Control for Lawns	Caution	X		X			X	

Insecticides / Miticides / Larvicides / Fungicides



(See next section for “3-in-1” products)

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word							Notes
			Conventional	Least Toxic	Insecticide	Miticide	Larvicide	Fungicide	
pyrethrin	<ul style="list-style-type: none"> • Doktor Doom Spider Mite KNOCKOUT • Fox Farm Don't Bug Me • Garden Tech Worry Free • Hot Shot Bed Bug & Flea Fogger • Y-TEX Garden & Poultry Dust 	Caution		X	X	X			
QST713 bacillus subtilis	<ul style="list-style-type: none"> • Serenade Garden Disease Control 	Caution		X				X	
rosemary oil peppermint oil thyme oil clove oil sodium lauryl sulfate	<ul style="list-style-type: none"> • EcoSMART Garden Insect Killer 	Caution		X	X	X			
rosemary oil citronella oil lemon oil	<ul style="list-style-type: none"> • Murphy's Mosquito Sticks 	Warning		X					Deet Free
sodium tetraborate	<ul style="list-style-type: none"> • Terro Outdoor Liquid Ant Bait Stakes 	Caution			X				
spinosad	<ul style="list-style-type: none"> • Captain Jack's Deadbug, • Natural Guard Spinosad • Fertlome Borer, Bagworm, and Tent Caterpillar Spray 	Caution	X		X				
sucrose	<ul style="list-style-type: none"> • SucraShield 	Warning		X	X	X			
sulfur	<ul style="list-style-type: none"> • Safer Garden Fungicide 	Caution		X				X	
thiophanate-methyl	<ul style="list-style-type: none"> • Scotts Fungus Lawn Control 	Caution	X					X	
thyme oil	<ul style="list-style-type: none"> • SNS244 	Caution		X				X	

3 in 1 (Insecticide, Miticide, Fungicide)

Products Available October, 2015



Ingredient(s)	Some Common Names	Signal Word	Notes
acetamiprid triconazole	Ortho Rose & Flower Insect & Disease	Caution	
captan malathion carbaryl	Bonide Fruit Tree Spray	Warning	
extract of Neem oil	<ul style="list-style-type: none"> • Bonide Fungicide, Miticide, Insecticide • Fertilome Triple Action • Garden Safe Fungicide 3 • Garden Safe Neem Oil Extract • Monterey Neem Oil • Natural Guard - Insects, Diseases, Mites 	Caution	Effective on powdery mildew, black spot, downy mildew, anthracnose, rust, leaf spot, botrytis, needle rust, scab and flower, twig and tip blight, and alternaria
mineral oil	Bonide All Seasons Horticulture & Dormant Spray Oil	Caution	
sesame oil	Orangicide 3 in 1	Caution	
sulfur pyrethrins	<ul style="list-style-type: none"> • Bonide Tomato & Vegetable 3 in 1 • Bonide Citrus, Fruit & Nut Orchard Spray • Miracle Gro 3 in 1 Insect, Disease & Mite Control • Natria Insect, Disease, and Mite Control • Natria Rose & Flower 3 in 1 • Nature's Care 3-in-1 Insect, Disease and Mite Control 	Concentrate = Warning Ready to Use = Caution	
tebuconazole tau-fluvalinate imidacloprid	Bayer Advanced 3 in 1	Caution	

Herbicides

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word												Notes
			Broadleaf	Grass	Stump	Pre-emergent	Post-emergent	Contact	Systemic	Selective	Non-selective	Warm weather	Cool weather	
2,4-D	<ul style="list-style-type: none"> Gordon's LV400 2,4-D Weed Killer Solvent Free 	Caution	X				X		X	X		X		Lawns, pastures, rangeland, corn, small grains & non-crop
2,4-D w/ dicamba mecoprop-p	<ul style="list-style-type: none"> Bayer Lawn Weed and Crabgrass Killer Fertilome Weed Free Zone Green Thumb Lawn Weed Killer Ortho Weed B Gon Spectracide Weed Stop for Lawns Weed Free Zone 	Caution	X				X		X	X		X	X	Above 45° & below 90°
2,4-D w/ quinclorac & dicamba	<ul style="list-style-type: none"> Gordon's Trimec Crabgrass Plus Lawn Weed Killer Ortho Weed B-Gon Plus Crabgrass Control 	Caution	X	X			X		X	X		X	X	Above 45° & below 90°
ammoniated soap of fatty acids	<ul style="list-style-type: none"> Garden Safe Weed & Grass Killer 	Caution	X	X			X	X		X		X		
bacillus subtilis	<ul style="list-style-type: none"> Natria Disease Control 	Caution				X								
citric acid, oils, clove	<ul style="list-style-type: none"> Bonide Burnout 	Caution	X				X		X		X	X	X	

Herbicides

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word											Notes		
			Broadleaf	Grass	Stump	Pre-emergent	Post-emergent	Contact	Systemic	Selective	Non-selective	Warm weather		Cool weather	
dicamba		Warning													Normally combined with other ingredients; broadleaf growth regulator (causes plants to grow in abnormal and uncontrollable ways, and often, the plants die).
diquat w/ flauzifop & dicamba	<ul style="list-style-type: none"> Spectracide Weed and Grass Killer 	Warning	X	X			X		X		X	X	X		
d-Limonene	<ul style="list-style-type: none"> Avenger Weed Killer 	Caution	X	X			X	X			X	X	X		
fluazifop	<ul style="list-style-type: none"> Grass B Gon Garden Grass Killer Ortho Weed B Gon Garden Grass Killer 	Caution		X			X		X	X		X	X		Slower in cool weather
glufosinate	Finale (Bayer)	Warning	X	X			X	X	X		X	X			Not found locally? Both contact & systemic
glyphosate	<ul style="list-style-type: none"> Ace Weed and Grass Killer Concentrate Gordon's Liquid Edger Green Thumb Weed & Grass Killer Groundwork Weed & Grass Killer HDX (<i>Home Depot</i>) Killzall Roundup 	Caution	X	X			X		X		X	X			
glyphosate & imazapyr	<ul style="list-style-type: none"> Ortho Ground Clear Complete Vegetation Killer 	Warning	X	X			X		X		X	X			Soil sterilant - read label directions
glyphosate w/ triclopyr	<ul style="list-style-type: none"> Round-up Poison Ivy Plus Tough Brush Killer 	Caution	X	X			X		X		X	X			

Herbicides

Products Available October, 2015

Active Ingredient(s)	Some Common Names	Signal Word															Notes
			Broadleaf	Grass	Stump	Pre-emergent	Post-emergent	Contact	Systemic	Selective	Non-selective	Warm weather	Cool weather				
glyphosate w/ diquat dibromide & indaziflam	<ul style="list-style-type: none"> Bayer Advanced Durazone Weed and Grass Killer 	Caution	X	X			X	X	X		X	X					
iron HEDTA	<ul style="list-style-type: none"> Whitney Farms Lawn Weed Killer 	Caution				X											
isoxaben	<ul style="list-style-type: none"> Gallery Fertilome Broadleaf Weed Killer w/ Gallery 	Caution	X			X					X				Primarily used in vineyards and fruit orchards		
MSMA	<ul style="list-style-type: none"> Crabgrass, Nutgrass, and Dallisgrass Killer 	Caution		X			X		X	X					Used on golf courses, sod farms, highway rights-of-way		
oryzalin	<ul style="list-style-type: none"> Monterey Weed Impede Green Light - Amaze Grass and Weed Preventer 	Caution	X	X		X					X				Pre-emergent herbicide, used in gravel landscapes to prevent weeds		
potassium of fatty acids	<ul style="list-style-type: none"> Safer Fast Acting Grass & Weed Killer 	Caution	X	X			X	X			X	X					
2-phenethyl propionate	EcoSMART Weed & Grass Killer	Caution	X	X			X	X			X	X					
sethoxydim	Hi-Yield Grass Killer	Caution		X			X		X	X		X					
sodium pyrosulphite	Bonide Stump-out	Caution			X												
sulfentrazone	Ortho Nugsedge Killer for Lawns	Caution	X				X		X	X		X	X				



Herbicides

Products Available October, 2015



Active Ingredient(s)	Some Common Names	Signal Word	Broadleaf	Grass	Stump	Pre-emergent	Post-emergent	Contact	Systemic	Selective	Non-selective	Warm weather	Cool weather	Notes
trichlopyr	<ul style="list-style-type: none"> Bonide Stump-out Stump and Vine Killer Bayer Advanced Brush Killer Fertilome Brush Killer Stump Killer Ortho Poison Ivy and Tough Brush Killer 	Caution			X									
trifluralin	<ul style="list-style-type: none"> Preen Monterey Weed & Grass Preventer 	Caution	X	X		X					X			



Animal Repellents

Available in October, 2015



Active Ingredient(s)	Some Common Names	Signal Word	Notes
castor oil with sodium lauryl sulfate	Repellex Mole and Gopher Repellent	Caution	Repels moles and gophers
cinnamon oil castor oil geran oil peppermint oil clove oil	Ortho Snake B Gone	Caution	Repels snakes
deltamethrin	Harris Scorpion Killer	Caution	Repels scorpions
dried blood with dried red pepper	Uncle Ian's Repellent	Caution	Repels: moles, gophers, deer, rabbits, squirrels
dried blood & putrescent whole egg solids	Bonide Repels-All	Caution	Repels in three ways: touch, taste and smell. Rain-fast in six hours. Safe for use around vegetables, fruit and ornamental plants. Repels:Deer, Rabbits, Squirrels, Chipmunks, Dogs, Cats, Raccoons, Porcupines, Armadillos, Birds, Rats, Mice, Beaver, Ground hogs, Skunks, Voles, Moles
iron phosphate	<ul style="list-style-type: none"> • Garden Safe Slug & Snail Bait • Miracle Gro Nature's Care Slug & Snail Control 	Caution	
oil of black pepper with capsaicin	Critter Ridder Havahart Critter Ridder	Caution	Repels Raccoons, Skunks, Dogs, Cats, Squirrels, Groundhogs and Chipmunks (irritates animals when they smell, taste or touch a treated area)
putrascent whole egg solids	<ul style="list-style-type: none"> • Deer Off • Liquid Fence Deer and Rabbit Repellent 	Caution	Repels deer, rabbits & squirrels
rosemary oil cinnamon oil peppermint oil putrescent egg solids	Ortho Animal B Gone	Caution	Repels rabbits, groundhogs, squirrels and other small herbivores
metaldehyde	Ortho Bug-Geta Snail & Slug Killer	Caution	Repels snails and slugs