

# Green Gardening Ways That Work!

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## Introduction

People want to know that the products they use to solve their lawn and garden challenges are not harmful to children, pets, bees, birds, salmon, groundwater, and Puget Sound. But people also want to use safe methods and products that really work, because no one wants to waste their time and money on ways that don't get the job done.

Garden Green, an initiative by Michael Laurie and Diane Emerson to reduce the use of toxic pesticides, has been working to find good, safe alternatives to toxic pesticides since 2015. This document is the result of research, our own field testing, and numerous interviews with experienced gardeners and farmers. Our safety reviews are based on research from Grow Smart Grow Safe: [www.growsmartgrowsafe.org](http://www.growsmartgrowsafe.org) or The Pharos Project: [www.pharosproject.net](http://www.pharosproject.net)

**Products or methods which are considered especially effective are listed in bold.**

To have the best results with these products it is important to take the time to learn how they work, and their limitations. For many of these safe products, they may not kill as completely and quickly as some of the toxic products, but that is the nature of the problem. If a product kills your pest or disease quickly and completely, it may harm other things you **don't** want harmed.

Some of the safe products achieve their best results if they are used at a particular time. For example, many of the insect sprays work best if applied when you first encounter a few problem insects. If you wait until the insects are overwhelming it may be too late to get the best results with the safe product.

Some of these products are only successful with specific pests, like powdery mildew or aphids. That means that part of the user's responsibility is to determine exactly what the pest or disease problem is. Thankfully we have Master Gardeners to help accurately identify insect and disease pests: [www.mgfk.org](http://www.mgfk.org)

There are also a number of books and online resources that can help on this subject, including:

Bio-Integral Resource Center, [birc.org](http://birc.org)

The Holistic Orchard book, Michael Phillips, Chelsea Green, 2011

The Gardener's Guide to Common-Sense Pest Control

Grow Smart, Grow Safe: [GrowSmartGrowSafe.net](http://GrowSmartGrowSafe.net)

The Pharos Project: [PharosProject.net](http://PharosProject.net)

Great Plant Picks – Plants that are less susceptible to disease and insects in Western Washington: [GreatPlantPicks.org](http://GreatPlantPicks.org)

Many garden pests have natural predators ranging from snakes for slugs, to lady beetles for aphids. Keep in mind that if a gardener uses too much of a pesticide and kills all of the pests, the predators that do some of the work will have nothing to eat and may die or leave.

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# Animals

## Birds

PRODUCT OR METHOD	USED FOR	INGREDIENTS	NOTES FOR BEST RESULTS
<b>Bird-X netting</b>	Birds		
<b>Flash Tape</b>	Birds	Bright, reflective tape	Take down after harvest so the birds don't get used to the tape
<b>Floating Row Covers</b>	Birds, deer, insects	Non-woven garden fabric	
Natural Enemy Scarecrow rotating owl head	Birds		
<b>Orbit Yard Enforcer</b>	Birds	Water	
Scare Tape	Birds	Bright, reflective tape	Take down after harvest so the birds don't get used to the tape

## Deer

PRODUCT OR METHOD	USED FOR	INGREDIENTS	NOTES FOR BEST RESULTS
<b>Deer Scram, Guaranteed</b>	Deer	Dried Blood, Garlic, White Pepper, Cloves, Meat Meal	Sprinkle on the ground around your plants, and some on the leaves. Activated by water, so sprinkle lightly after spreading if needed.
<b>Deer-X netting</b>	Deer		
<b>Fencing</b>	Deer		6-8 feet tall if net or wire, 5 ½ feet tall if the deer can't see through the fence
<b>La Torre's Deer out</b>	Deer	Peppermint oil, garlic oil, white pepper, putrescent eggs	

Deer, continued

<b>PRODUCT OR METHOD</b>	<b>USED FOR</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
<b>Floating Row Covers</b>	Deer, birds, insects	Non-woven garden fabric	Used for row crops
<b>Liquid Fence Deer and Rabbit Repellant</b>	Deer and Rabbits	Putrescent egg solids, garlic, sodium lauryl sulfate, potassium sorbate, thyme oil, water, sodium citrate, sodium benzoate, citric acid, xanthan gum	
<b>Plantskydd Deer Repellant, Guaranteed</b>	Deer	Dried blood of pigs and cows, and vegetable oil	Spray lightly on foliage. Use pre-mixed product within 3 months. Guaranteed to repel deer.
<b>Pro-Tec Deer and Rabbit Repellant</b>	Deer	Garlic oil in plastic clips	Clip them onto the stems of roses and other favored plants in the fall, and it will last all winter.

## Moles

<b>PRODUCT OR METHOD</b>	<b>USED FOR</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
<b>Chase Granular Mole and Gopher repellent</b>	Moles and Gophers	Castor oil, sodium lauryl sulfate, and corn cob granules. Not for use where food is grown, but not harmful to birds, pets, or plants.	Be prepared to continue to apply, as moles are notoriously difficult to keep away.

## Raccoons

<b>PRODUCT OR METHOD</b>	<b>USED FOR</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
<b>Havahart Live animal traps and cage traps</b>	The largest size can handle raccoons		Peanut butter bait. It is legal to trap on your property, but illegal to transport

### Raccoons, continued

<b>PRODUCT OR METHOD</b>	<b>USED FOR</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
Plant cucumbers or squash to protect from raccoons in corn, and at the base of fruit trees.	Raccoons		The cucumbers and squash have prickly leaves that the soft-footed raccoons do not like to step on.
Electric Shock: Electrified wire wrapped around the trunk of a tree will discourage climbing. Or, you can make an ordinary fence raccoon-proof by adding a single electrified strand of wire 8 inches above the ground and 8 inches out from the base of the fence.	Raccoons	For electrifying the wire or fence, a pulsating high-voltage, low-ampereage fence charger is used.	Or, a low, two-wire electric fence can be very effective for excluding raccoons from crops. The two wires are fastened on evenly spaced wooden posts; one wire is 6 inches above the ground and the other is 12 inches above the ground.

## Rodents

<b>PRODUCT OR METHOD</b>	<b>USED FOR THESE RODENTS</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
<b>Automatic Humane Non-Toxic Rat and Mouse Trap Kit with Counter</b>	Rats, can also be used for ground squirrels and ground squirrels. Do not use around our native (and protected) Douglas squirrels. Automatically resets itself. Weather proof.	Kills through a CO2 cartridge when the rat pokes its head into the trap.	Follow directions carefully, and try different baits if the one which comes with the trap doesn't work for your rodents.
Critter Out	Mice, rats, squirrels	Peppermint oil, lemongrass oil, clove leaf oil, garlic oil, sodium chloride, white pepper, putrescent egg solids	Good to spray under the hood of vehicles where rodents eat wiring
'Great Stuff' Foam Sealant	All rodents in buildings: for sealing openings rodents can enter	Prepolymer of MDI and Polyether polyol	Difficult to re-use a can, so plan to use the whole can once you begin

### Rodents, Continued

<b>PRODUCT OR METHOD</b>	<b>USED FOR THESE RODENTS</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
<b>Havahart Live animal traps and cage traps</b>	Mice, squirrels, up in size to raccoons		Peanut butter bait. It is legal to trap on your property, but illegal to transport
<b>PestZilla Electric Rat Trap</b>	Rats, mice, and squirrels	Kills by electrocution	Should be kept dry. Can short out in rain. For rats, set it out without being turned on for a few nights so they get used to it first.
Rat X	Rats and Mice only	Corn gluten meal, salt	Remove other food sources for best results
'Fresh Cab' Botanical rodent repellent	Rodents	Balsam fir oil	Best for enclosed spaces like storage sheds
<b>Rugged Ranch Ratinator</b>	Rats	Live trap which can trap up to 8 rats at a time	
Pestacator 2000 Plug In Rodent Repeller	Rodents	Plug in unit, uses a pulse technology to send silent pulsing signal through your homes wiring	It will take a week or two to drive them out
<b>T3-R Triple High Impact Rodent Repeller</b>	Mice, rats, squirrels	Repulsive Ultrasonic Sounds (sound above human hearing).	It will take a week or two for the rodents to leave
<b>Victor Electronic mousetrap</b>	Mice only	High voltage shock kills mice in 5 seconds.	
<b>Victor Ultrasonic rodent repellers</b>	Rodents	Emits high frequency sound waves that repel rodents	It will take a week or two for the rodents to leave
<b>Victor Rat and mouse traps</b>	Rodents	Mechanical traps	

# Squirrels

<b>PRODUCT OR METHOD</b>	<b>USED FOR THESE ANIMALS</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
Deer Out's Critter Out	Squirrels, mice, rats. Ace Vashon recommends to spray under the hoods of cars to prevent chewing of wires	Peppermint oil, lemongrass oil, clove leaf oil, garlic oil, sodium chloride, white pepper, putrescent egg solids	
<b>Eco-Defense Rodent Gone</b>	Squirrels, mice and rats	peppermint oil, cinnamon oil, castor oil	
<b>Havahart Live animal traps and cage traps</b>	Squirrels, animals in size from mice to raccoons		Peanut butter bait. It is legal to trap on your property, but illegal to transport
<b>PestZilla Electric Rat Trap</b>	Squirrels, mice, rats	Kills by electrocution	Should be kept dry. Can short out in rain.
<b>Raticator S Plus, Version 2.0</b>	Squirrels, mice, rats	Kills by electrocution	This improved version has upgraded electronics and Conformal Coating to help prevent corrosion in humid environments. Still can't be left outside in the rain, though.
<b>Rugged Ranch Squirrelinator Trap</b>	Squirrels – can catch up to 12 gray squirrels at a time	Metal live trap	
Red Pepper Flakes	Repelling squirrels from newly planted bulbs and bird feeders	Red pepper flakes from the grocery store	For bulbs, sprinkle the flakes on the soil over newly planted bulbs. For the bird feeders, mix red pepper flakes in the birdseed. Tested by Cornell University: <a href="http://www.walterreeves.com/uploads/pdf/squirrelpepper2.pdf">http://www.walterreeves.com/uploads/pdf/squirrelpepper2.pdf</a>
<b>T3-R Triple High Impact Rodent Repeller</b>	Squirrels, mice, rats	Repulsive Ultrasonic Sounds (sound above human hearing).	It will take a week or two for the rodents to leave

# Voles

PRODUCT OR METHOD	USED FOR THESE ANIMALS	INGREDIENTS	NOTES FOR BEST RESULTS
1/4 inch Hardware Cloth or plastic protectors around trees, shrub trunks	Voles, (and damage from string trimmers)	Physical deterrent. No chemicals.	Wrap the trees loosely (to allow for growth) in a collar of 1/4 inch hardware cloth or plastic. Bury it 2 inches deep and it should be 12-18 inches high. Close mowing of the area prevents voles from making their runways and exposes them to predators.
Molemax mole and vole repellent	Voles and moles	Castor oil	

# Disease

FOR THESE DISEASES	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
Powdery mildew, other fungal disease	<b>Bonide® Sulfur Plant Fungicide RTU</b>	Sulfur. This is pure sulfur. Other products with other ingredients added to the sulfur may not be as safe for the environment	Best to apply before the fungus arrives, or at first signs of a problem.
All	Choose native and/or disease resistant plants for our climate, soil, and microclimate		See <a href="http://www.greatplantpicks.org">www.greatplantpicks.org</a> for maritime Pacific Northwest recommendations. Also see the Washington Native Plant Society <a href="http://www.wpns.org/landscaping">www.wpns.org/landscaping</a>
Powdery mildew, rust, black spot, peach leaf curl, shot hole, leaf blotch, scab, dollar spot, brown rot and other plant diseases	Dr. Earth 8007 Ready to Use Disease Control Fungicide	Rosemary Oil, Cloves & Clove Oil, Peppermint Oil And Malic Acid	
Fungal diseases. Keeps disease spores from splashing up onto leaves, and helps leaves stay dry overnight	<b>Drip irrigation and timer to help avoid overwatering</b>		Set timers to water early in the day, to save water and have dry foliage by night time
Black spot, powdery mildew, blight and rust	Eco-Smart organic 3 in 1 rose and flower care (disease, insects and mites)	Rosemary oil, thyme oil, sodium lauryl sulfate, peppermint oil	

### Disease, Continued

<b>FOR THESE DISEASES</b>	<b>PRODUCT OR METHOD</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
Black spot, rust, powdery mildew, blight and other common plant diseases.	Eco-Smart Organic Garden Fungicide	Rosemary and rosemary oil, thyme and thyme oil	
Fungal disease, others	Move sun loving plants to better conditions, as trees and shrubs grow and shade them		
All: Build healthy soil so plants can fight off disease on their own	<b>Organic compost and fertilizer</b>		
Powdery mildew, other fungal disease	Organocide™ 3-in-1 Garden Spray (fungicide, insecticide, miticide)	Sesame oil, fish oil, lecithin	
Powdery mildew, other fungal disease	<b>Safer Brand Garden Fungicide</b>	Sulfur	
Black spot, powdery mildew, rust, gray mold, late blight, scab	<b>Serenade Disease Control Concentrate</b>	Bacillus subtilis	
Nearly any kind of fungal diseases, including leaf blights, powdery mildew, anthracnose, bacterial canker, apple scab, and more	<b>Southern Ag Garden Friendly Biological Fungicide</b>	Bacillus amyloliquifaciens strain D747	Best to spray as soon as any fungal disease starts, or even before, as a preventative on susceptible plants.

# Insects

FOR THESE INSECTS	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
Whiteflies, aphids, mealy bugs, mites	<b>Bug Blaster Bbn Conversion Nozzle</b>	Water, sprayed in such a way that it gets the undersides of leaves and crevices	Be sure to buy the extension too, or you will get wet!
Mosquitoes and other flying insects	<b>Citronella incense sticks</b>	Brazilian Andiroba oil blended with citronella, rosemary & thyme	
Aphids, caterpillars, mites	Eco-Smart organic 3 in 1 rose and flower care (disease, insects and mites)	Sesame oil, fish oil, lecithin	
Over 100 crawling insects	<b>Eco-Smart organic insect killer, granules version only</b>	2-phenethyl propionate, sodium lauryl sulfate, eugenol, thyme oil, sesame oil	
Mosquitoes, flies, any flying insect you can touch with the racket.	<b>Zap-It! Bug Zapper Racket</b>	No chemicals. Zaps them with electricity, but safe for humans to touch. Has rechargeable battery.	Similar to a fly swatter, but you can kill them on the wing with this.
<b>EcoSMART 33103 Organic Ant and Roach Killer</b>	Ants and roaches	Peppermint oil, rosemary oil	
<b>EcoSMART 33105 Organic Wasp and Hornet Killer</b>	Wasps and hornets	Peppermint oil, phenethyl propionate	
Floating Row Covers	Flea beetles, cabbage moths, and other insects, as well as deer and birds	Non-woven garden fabric	
Hand removal	Aphids, caterpillars		Good for early signs of problems

## Insects, Continued

USED FOR THESE INSECTS	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
Aphids	<b>Live Ladybugs for aphids by Bug Sales</b>		Likely to be more successful in a greenhouse than in a garden. Proper timing of releases and the use of beetles that have used up their stored fat and are ready to feed are very important
Used for many insects	Plants to attract beneficial insects		Sweet alyssum, dill, yarrow, angelica, dandelion, lemon balm, parsley, tansy, spearmint, and others
Yellow jackets (wasps)	Rescue YJTR-DT12 Reusable Yellow Jacket Trap	Food product attractant	
Whiteflies	Safer Sticky Trap for whiteflies	Attracted to yellow color, trapped on sticky paper	
Apple maggot, plum curculio, codling moth, European apple sawfly, oriental fruit moth, tufted apple bud moth, white apple leafhopper, and pear psylla.	Surround WP kaolin clay	A common mineral, when highly refined into powder, it is a patented product called 'Surround'	The tiny clay particles serve to disguise the target fruit and can clog the eyes, ears and reproductive organs of the insects.
Ground bees	Tarps placed over ground nesting bee holes		Place at night. Make sure the tarp extends several feet beyond the holes, and weight them down. Leave in place for a week.
Fruit flies	Terro Fruit fly trap	Sodium lauryl sulfate, acetic acid	
Gypsy moths, cankerworms, weevils, ants, caterpillars, moths and cutworms	<b>Tree Tanglefoot Insect Barrier</b>	Natural gum resins, castor oil, carnauba wax	Apply it to duct tape, cloth, or directly on the tree

### Insects, Continued

USED FOR THESE INSECTS	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
Wasps, yellow jackets, and hornets.	<b>Waspinator Fake Wasp Nests</b>	No chemicals. Cloth or nonwoven. Repels based on visual clues only.	Works best if wasp nests are not well established. Store the next inside during winter. You may want to stuff plastic bags inside it to help it keep its shape over time.

# Moss

PRODUCT OR METHOD	USED FOR	INGREDIENTS	NOTES FOR BEST RESULTS
Baking Soda	Moss	Bicarbonate of soda	
<b>Agricultural Lime</b>	Moss in the lawn: adjusting pH so grass can better compete with the moss	Ground limestone	Apply spring and fall
Pruners to cut overhanging limbs	Moss		To increase light and air circulation
Scraping tool for roof	Moss		Be careful not to damage shingles

# Slugs and Snails

<b>PRODUCT OR METHOD</b>	<b>USED FOR</b>	<b>INGREDIENTS</b>	<b>NOTES FOR BEST RESULTS</b>
<b>Beer Traps</b>	Slugs and snails	Beer, to drown them	Find a gallon jug. Cut a 1" by 1" opening about 3-4" above the bottom. Add one can of beer. Our big slugs need a couple inches of depth to drown in. No need to remove dead slugs.
<b>Corry's Slug &amp; Snail Copper Tape Barrier</b>	Slug and snail repellent	Adhesive Copper tape	Apply to pots, raised beds, ends of mushroom logs, and more.
Encourage predators: Ground beetles, snakes, voles, ducks, other birds, and toads	Slugs and snails		Provide cover and water
Hand Pick slugs and kill or relocate.	Slugs and snails		Go out at night or early morning, and on cloudy, wet days. Consider relocating the native banana slugs to the forest.
Other traps	Slugs and snails	Boards, upside down pots, cardboard	Create a nice daytime hiding place for the slugs and snails, and go out on a sunny day and collect them from their cool, shady spot.
<b>Safer® Slug &amp; Snail Copper Tape Barrier</b>	Slug and snail repellent	Adhesive Copper tape	Can make protective collars by cutting up plastic containers and putting copper tape around a 4-6 inch tall 'collar'. Be sure collar is tight to the ground, protecting the individual plant, so slugs don't go under.

# Weeds

USE FOR THESE WEEDS	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
All except noxious weeds required by law to be controlled.	Allow a few weeds to live in the lawn or garden		Relax. Weeds are good for pollinators, beneficial insect predators, and butterflies
Grass and broadleaf weeds. Do not use where it can get into streams, lakes, or Puget Sound, as it is toxic for crustaceans and fish.	<b>BioSafe Weed Control</b> . OMRI rated	Ammonium Nonanoate, aka Ammonium salt of fatty acid	
Small weeds in sidewalks, patio cracks, other paved areas	Boiling water		Do it when the plants are already stressed by heat and drought. Make sure the water is at full rolling boil.
All types of actively growing weeds and grasses	Bonide Burn Out	citric acid and clove oil	
All weeds. Weeds come in when you leave bare soil.	Plant temporary cover crops in bare soil: annual clovers, peas, oats and buckwheat, others		
Annual weeds, seedlings of perennial weeds	Down to Earth Corn Weed Blocker. It is a pre-emergent & keeps many plant seeds from sprouting	Corn gluten meal	Best used in dry conditions. No effect on established plants
All weeds	<b>Drip irrigation and timer provides Accurate watering so weeds are not watered</b>		Have replacement parts on hand. Check emitters regularly during the season.
Weeds in gravel paths and driveways, stone walls, paving cracks	<b>Flame weeder</b>	Propane flame	Best used on small plants, when they have been watered well.

## Weeds, Continued

USE FOR THESE WEEDS	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
Blackberries, ivy, even holly, but not the berries of ivy or holly	Goats and Sheep		Need good temporary fencing or supervision, and knowledge of toxic plants they should not eat.
All weeds	Hire teenagers to weed		Need good supervision. Suggest \$15/hr.
All weed seeds: Covering bare soil to help keep weeds from sprouting. Mulch several inches thick, unless it is fresh grass clippings. Fresh grass clippings should be spread no deeper than 2 inches.	Mulch, including Sheet Mulching, where you place cardboard under the mulch to kill grass and weeds underneath the mulch.	Wood chips, compost, straw, cardboard, 100% cotton or wool rugs, sheets, clothing, thick cardboard, burlap bags, etc.	Vary the mulch to define where your paths are. Cardboard from recycling can be used under mulch for longer lasting protection, and to kill the weeds below the mulch.
All weeds. Can also be used to kill cover crops prior to planting crops.	Occultation tarps (silage tarps)	Light-proof materials: black re-usable silage tarps.	Water well before laying down the tarp. Use materials that can be re-used, rather than black plastic.
Annual weeds and seeds of perennial weeds. It is a pre-emergent, to prevent many plant seeds from sprouting	Preen® Organic Vegetable Garden Weed Preventer	Corn gluten meal	Best used in dry conditions. No effect on established plants
Blackberries and nettles	Thorn proof elbow length gloves	Synthetic suede or other thorn proof material	
All types of actively growing weeds and grasses	<b>Vinegar, 20 per cent pure vinegar, acetic acid</b>	Acetic acid	Wear protective eyewear and rubber gloves. Most effective if plants are stressed from lack of water
Annual weeds	Water deeply but infrequently	Discourages annual weeds from sprouting	Best if your soil is at least 4 inches deep

### Weeds, Continued

USE FOR THESE WEEDS	PRODUCT OR METHOD	INGREDIENTS	NOTES FOR BEST RESULTS
Annual and perennial weeds	Water with drip irrigation on a timer	Discourages annual weeds from sprouting, and slows down perennial weeds	Helpful to have timers and filters on the water lines.
All weeds	<b>Weeding Tools</b>		A saw tooth shovel, for example, is great for digging out blackberry roots.
All weeds	<b>Worldwide Workers On Organic Farms (WWOOFers) or HelpX workers:</b> 4 hours of work a day in exchange for room and board		Need a place for them to sleep, need to feed them, and often transport them. <a href="https://wwoofusa.org/">https://wwoofusa.org/</a> and <a href="https://www.helpx.net/">https://www.helpx.net/</a>