

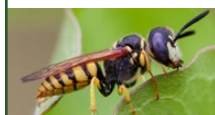
Green Gardening Solutions for Nurseries

Manage pests, weeds & disease without toxic pesticides

Nurseries and commercial greenhouse operators have tough pest issues not always faced by home gardeners. **This guide covers effective ways that nurseries can solve pest, weed and disease issues without using toxic pesticides.** The guide is organized in sections by the type of problem that a nursery might be facing.

Additional Resources

- Northwest Center for Alternatives to Pesticides- www.pesticide.org
- Garden Green- www.gardengreen.org
- Grow Smart, Grow Safe- www.growsmartgrowsafe.org
- Bio-Integral Resource Center- www.birc.org



Insects

SOLUTION	USED FOR	INGREDIENTS	NOTES
EcoSMART Ant & Roach Killer	Ants and cockroaches	Peppermint oil, rosemary oil, water, isopropyl alcohol, wintergreen oil, white mineral oil, polyglyceryl oleate, sodium benzoate, vanillin, nitrogen	
Live Ladybugs	Aphids		Good for greenhouses. Proper timing of releases is very important.
EcoSMART Insect Killer Granules	Crawling insects	Clove oil, thyme oil, sesame oil, corn cobs, wintergreen oil	Use granules version only
Floating Row Covers	Flea beetles, cabbage moths, other insects	Non-woven garden fabric	
Red Mustard Trap Crop	Flea beetles		Plant near hard surface where flea beetles live. As soon as you see damage to red mustard, flame weed paths and mustard.
Terro Fruit Fly Trap	Fruit flies	Sodium lauryl sulfate, acetic acid	
Plants to attract beneficial insects	Many insects		Sweet alyssum, dill, yarrow, angelica, dandelion, lemon balm, parsley, tansy, spearmint, and others
OMRI rated Sesame Oil Spray, rotated with dilute isopropyl alcohol spray	Mealybug	Sesame oil, Isopropyl alcohol	

Made by:



gardengreen.org



NORTHWEST CENTER FOR
ALTERNATIVES TO PESTICIDES

pesticide.org

Support
from:



Department of Natural Resources and Parks
Wastewater Treatment Division



PUGET
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Insects continued

SOLUTION	USED FOR	INGREDIENTS	NOTES
Neem Oil	Spider mites		
EcoSMART 33105 Organic Wasp & Hornet Killer	Wasps and hornets	Peppermint oil, phenethyl propionate	
Bug Blaster Bbn Conversion Nozzle	Whiteflies, aphids, mealy bugs, mites	Water, sprayed so that it gets the undersides of leaves and crevices	Be sure to buy the extension too, or you will get wet!
Waspinator Fake Wasp Nests	Wasps, yellow jackets, hornets	Cloth or nonwoven. Repels based on visual clues only, because wasps are territorial.	Best if nests aren't well established. Store fake nest inside in winter, stuff plastic bags inside to keep its shape over time.
Safer Sticky Trap for Whiteflies	Whiteflies	Attracted to yellow color, trapped on sticky paper	
Cinnamon Spray	Whiteflies		

Rodents



Animals

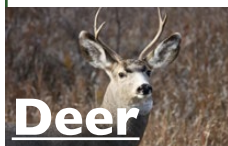
SOLUTION	USED FOR	INGREDIENTS	NOTES
Automatic Humane Non-Toxic Rat & Mouse Trap Kit with Counter	Rats and ground squirrels. Note: Although nonnative to Puget Sound, ground squirrels are native to the Columbia Basin region of eastern WA and north-central OR. Do not use this solution if in those areas, or around other native and protected species like Douglas squirrels.	CO ₂ cartridge kills when the rat or ground squirrel pokes its head into the trap.	Follow directions carefully, try different baits if one that comes with the trap doesn't work for your rodents. Automatically re-sets itself, weatherproof.
Electric Rat & Mouse Traps	Rats, mice, etc.	Kills using high-voltage shock	Keep dry, can short out in rain. For rats, wait to turn on for a few nights so they get used to it first. Brands include Victor and PestZilla.
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
'I Must Garden' Mole & Vole Repellent	Voiles and moles	Castor oil, mint oil, cedar oil	
Rugged Ranch Ratinator	Rats	Live trap that can trap up to 8 rats at a time	

Rodents continued



Animals continued

SOLUTION	USED FOR	INGREDIENTS	NOTES
Snap Traps under a bucket	Mice and rats in the greenhouse, voles and moles	Bait traps with black oil sunflower seeds & peanut butter	Cut 1 inch diameter holes around the bottom of a 5 gal. bucket (to keep birds out). Place traps in bucket, put lid on, and put weight on top to keep bucket from being tipped over. For voles, place near the row crops.
Ultrasonic Rodent Repeller	Rodents	High frequency sound waves repel rodents (this sound is above human hearing)	Will take a week or two for the rodents to leave. Brands include Victor and T3-R.



Deer

SOLUTION	USED FOR	INGREDIENTS	NOTES
Deer Scram	Deer and rabbits	Blood meal, garlic, red pepper, cloves; odor deters deer	Sprinkle granules on both plants and ground around your plants
Fencing of various kinds	Deer	Non-woven garden fabric	6-8 ft tall if net or wire, 5½ ft tall if the deer can't see through the fence. Make sure they can't dive under the fence.
LaTorre's Deer Out™	Deer	Peppermint oil, gum arabic, hydrogenated vegetable oil	Won't harm the deer, but deters them from eating your plants
Floating Row Covers	Deer, birds, insects	Non-woven garden fabric	Used for row crops
Motion Detector Water Sprayer	Deer, other animals	Spray of water keeps animals away	Orbit 62100 is highly rated, has day only and night only settings



Slugs & Snails

SOLUTION	USED FOR	INGREDIENTS	NOTES
Corry's Slug & Snail Copper Tape Barrier	Slugs and snails	Adhesive copper tape	Apply to pots, table edges, around trays, etc.
Iron Phosphate Slug Baits, OMRI (Organic Materials Review Institute) certified	Slugs and snails	Select products that contain only iron phosphate	Sluggo® is a popular brand. Don't put slug bait on floor of the greenhouse- can kill amphibians which help patrol insects.
Beer or Yeast Traps (Homemade)	Slugs and snails	Can, bowl or other dish of beer; or yeast, water and sugar. Bugs drown.	Bury container partly in the soil so that top is level with the soil (or cut a hole partway up a beer can so slugs crawl in).
Encourage Predators	Slugs and snails		Encourage ground beetles, snakes, voles, ducks & birds, toads. Provide cover and water.

Birds



Animals continued

SOLUTION	USED FOR	INGREDIENTS	NOTES
Bird-X Netting	Birds	Plastic netting	Various types/sizes of plastic netting
Floating Row Covers	Birds, deer, insects	Non-woven garden fabric	
Inverted Flats	Birds		Place on top of sprouting seeds when the birds want to pull up the new seedlings in a flat



Weeds

SOLUTION	USED FOR	INGREDIENTS	NOTES
Bonide BurnOut®	All types of actively growing weeds and grasses	Citric acid and clove oil	
Occultation Tarps (Silage Tarps)	All weeds. Can also use to kill temporary cover crops prior to planting.	Light-proof materials: black, heavy-duty reusable silage tarps. Black on one side, white on the other.	Water well before laying down the tarp. Avoid single use black plastic.
Horticultural Vinegar	All actively growing weeds and grasses	20% pure vinegar, acetic acid	Wear protective eyewear and rubber gloves. Most effective if plants are stressed from lack of water, and sprayed on a hot sunny day.
Flame Weeder	All weeds in gravel paths and driveways, stone walls, paving cracks	Propane flame	Best used on small plants, when they have been watered well. Follow all safety precautions.



Diseases

SOLUTION	USED FOR	INGREDIENTS	NOTES
Serenade Disease Control Concentrate	Black spot, powdery mildew, rust, gray mold, late blight, scab	Bacillus subtilis	
Southern Ag Garden Friendly Biological Fungicide	Fungal diseases: leaf blights, powdery mildew, anthracnose, bacterial canker, apple scab, etc.	Bacillus amyloliquefaciens strain D747	Spray as soon as fungal disease starts or even before, as a preventative on susceptible plants
Pure Sulfur Plant Fungicide	Powdery mildew, other fungal diseases	Pure sulfur. Products with other ingredients may not be as safe for the environment	Apply before the fungus arrives, or at first signs of a problem