

Pesticide Alternatives and Integrated Pest Management (IPM)

Integrated Pest Management (IPM) employs a combination of techniques to keep pest numbers low enough to prevent intolerable damage or annoyance using the least toxic, effective management options.

The following lists may help you to identify an appropriate combination of actions when pests cause unacceptable damage.

Cultural Controls: garden design and maintenance practices

		Weeds	Moss	Insects	Disease	Slugs
Plant selection	Choose the right plants for the site; cultivars or native plants that are resistant to pests, and adapted to our climate and the site. Consider sun and shade, winter temperatures, winds, etc.	✓		✓	✓	
	Plant diversity; choose a variety of plant families, species, and cultivars. Use as many natives as possible.	✓		✓	✓	
Design	Select healthy plants; use weed, insect, and disease-free nursery stock and bedding plants.	✓		✓	✓	
	Design and plant beds for long-term insect, disease, and weed management; correct drainage, soil preparation, fertility, irrigation systems, walkways that prevent weed growth, and pH.	✓			✓	
	Prepare soil to provide best growing conditions, including fertility, drainage, pH, and organic matter.	✓		✓	✓	
	Before planting, deplete seed bank in soil by allowing weed seeds to germinate, then cultivate to kill seedlings; repeat 2 - 4 times, plant aggressive ground-covers and massed plantings.	✓		✓	✓	
	Have manual overrides on automatic watering systems to adjust for wet days.	✓		✓	✓	✓
	Expose area to sun, and keep dry, providing good air circulation and ventilation.		✓	✓	✓	✓
Maintenance	In a greenhouse, control temperature and keep pests out with screens at vent openings and fan intakes.			✓		
	Encourage natural enemies of common insect pests: predatory insects, spiders or mites, and wildlife.			✓		✓
	Use planting practices that give plants the best start and follow management practices that keep plants healthy: transplanting methods, spacing, watering, fertilizing, pruning, staking, and mowing practices.	✓		✓	✓	
	Sanitation: pull weeds that could be alternate hosts to disease and insects, remove trash and plant debris that insects can hide in, or diseases can grow on.	✓		✓	✓	✓
	Install a hardscape or mulched mow strip under fence lines, and fill cracks in hardscapes with a sealant.	✓			✓	
	Regularly inspect /identify weeds, diseases and insects (know their life cycle) to correct soil conditions.	✓		✓	✓	
	Lay down weed barriers such as mulches or landscape fabric to prevent weeds.	✓				
	Prune, thin and stake if required, to increase air circulation and reduce shade.			✓	✓	✓
	Raise humidity during dry conditions.			✓		
	Drain wet spots to remove breeding sites for insects.			✓		✓
Don't over fertilize or over water plants.	✓		✓	✓		

Physical/Mechanical Controls: tools, materials, and techniques

		Weeds	Moss	Insects	Disease	Slugs
Tools	Hoeing or pulling weeds, and hand-removal of pests such as Tent Caterpillars and slugs.	✓		✓		✓
	Use flame, hot or pressurized water, or carpet cutter knives on weeds in cracks in hardscapes.	✓				
	Expose area to sun by opening up tree canopies, replace solid fences with open fencing, add lime, fertilize, improve drainage, and aerate.		✓			✓
Traps	Brush or sweep off moss.		✓			
	Use sticky traps or sticky tree bands.			✓		
Techniques	Use traps for pillbugs, earwigs, and slugs. This includes cover objects (such as pieces of wood or damp cardboard), and pitfalls with beer as bait for slugs.			✓		✓
	Use a strong spray of water to knock insects, such as aphids, off plants. Repeat in a couple of days.			✓		
	Prune out disease infested leaves and stems. Burn or discard the infected material well away from susceptible plants and disinfect pruning tools, shoes, and hands before working on other plants.				✓	
	Rake up and destroy fallen leaves from diseased plants.				✓	
	Use water to rinse off powdery mildew from leaves. Best done mid-day to give plants time to dry off before nightfall. Not advisable for rust, scab, blight, or those promoted by wet conditions.				✓	

Biological Controls: using natural enemies and biodiversity

		Weeds	Moss	Insects	Disease	Slugs
Diversity	Encourage healthy soil for beneficial soil microorganisms, and for plants to outcompete weeds.	✓			✓	
	Plant native trees and hedgerows (www.naturescapebc.ca) that attract beneficial insects, birds, and bats.			✓		✓
	Provide nestboxes for birds, and bat houses for bats (www.naturescapebc.ca).			✓		✓
	Provide dry stone walls and rock piles for snakes and other reptiles and amphibians (www.naturescapebc.ca).			✓		✓
	Use pheromone traps.			✓		
Natural	Encourage beneficial microorganisms naturally present in the soil, air and leaf surfaces.				✓	
	Ladybugs			✓		
	Nematodes			✓		
	<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> (Btk)			✓		
	<i>Bacillus thuringiensis</i> subspecies <i>israelensis</i> (Bti)			✓		
	Green Earth 'Attack Pack', The Bug Lady 'Ladybugs'			✓		
	Green Earth 'Grub buster', The Bug Lady "Weevilution"			✓		
Controls (all) caterpillars: Green Light 'Dipel'			✓			
Controls (all) aquatic fly larvae, including mosquitoes and black flies: Summit Chemical Co 'Mosquito Dunks'			✓			

Least Toxic Permitted Pesticides: the last resort (some examples)

(see Part 7-Schedule "A" of the Saanich Pesticide Bylaw at www.pesticide.saanich.ca)

		Weeds	Moss	Insects	Disease	Slugs	
Least Toxic	Acetic acid products	✓					
	Boric or boracic acid (borax)			✓			
	Fatty acids	✓					
	Ferric phosphate					✓	
	Ferrous sulphate		✓				
	Horticultural/dormant oil			✓			
	Lime sulphur			✓	✓		
	Pyrethrins			✓			
	Resmethrin			✓			
	Soaps	Ecosense Moss B Gon, Safers De-Moss		✓			
		Environmental Factor Zap Insecticidal Soap, Scotts EcoSense Insecticidal Soap, Safers Insecticidal Soap, Green Earth Insecticidal Soap, Safers Trounce Yard & Garden Insecticide, Wilson Pro Insecticidal Soap Concentrate, Safers Trounce, Safers End All II, Safers Rose and Flower Insecticide, Safers Tomato and Vegetable Insecticide			✓		
	Sulphur				✓		
	Zinc strips		✓				
	Copper	Stops copper snail and slug tape					✓
	Natural	Baking soda				✓	
		Diatomaceous earth			✓		✓
		Corn gluten meal	✓				
Milk					✓		
Mildew: 50/50 milk and water					✓		

* This list is not intended to endorse any specific product or its effectiveness in controlling particular pests. Always follow the label's instructions. For a more complete list of available products visit a retailer.