

Pollinator Savvy Plant Care
City of Kirkland - Natural Yard Care – Saturday, June 4, 2016



Understanding Integrated Pest Management

Definition:

“IPM is an approach to pest control that utilizes regular monitoring to determine if and when treatments are needed. IPM employs physical, mechanical, cultural, biological and **educational** tactics to keep pest numbers low enough to prevent intolerable damage or annoyance. Chemical controls are used as a last resort, and the least-toxic chemicals are preferred.” From IPMopedia / Toxipedia

Why IPM?

- Pesticides are by design toxic and meant to kill things
- Increase in pesticide use over the course of agriculture has not netted an increased benefit in pest management
- Lawns cover an area measured as 40.5 million acres (2008)
- In 2007 total pesticide use in U.S. = 78 million pounds
- Top pesticides used were herbicides, 2,4-D - broadleaf weed killer on lawns and glyphosate - non-selective weed-killer in the landscape
- Ratio of pesticide use by homeowner on their lawns compared to agricultural use = 10 to 1.
- Pesticide use poses threats to non target organisms – aquatic, insect and mammal
- Risk to humans = toxicity of the material used and length and intensity of exposure to that material

What's in That Pesticide?

- 5% active Ingredient versus 95% inert ingredients
- Inert ingredients can also be harmful - not required to be listed on the label
- In some cases inert ingredients are considered “trade secrets”
- Use your resources to learn about pesticides
 - Safety Data Sheets – aka Material Safety Data Sheet
 - Grow Smart, Grow Safe website
 - Washington Toxics Coalition
 - Northwest Coalition for Alternatives to Pesticides – NCAP
- Neonicotinoids and bees – multiple cases of large bee die offs in response to exposure to pesticides in this group.

IPM Steps

- Prevention
- Monitoring and Observation
- Intervention

Prevention

- This is the main work of gardening
 - Mulch - prevent weeds, maintain soil moisture and moderate soil temperature
 - Improve soil – test soil, add compost, fertilize properly, use cover crops
 - Plant right plant in right place
 - Remove diseased or pest infested plant parts
 - Avoid overcrowding – prune for air flow, don't plant too closely
 - Water in the morning – deeply and slowly and avoid wetting foliage
 - Rotate vegetable crops – especially tomato, onion and cabbage family

- Plant a diverse garden to encourage beneficial insects and helpful wildlife – they will help manage pests
- Use floating row cover to prevent insect damage
 - Imported Cabbage Worm and cabbage family
 - Carrot Rust Fly and carrot family
 - Leaf Miner and Chard family
 - Peas and pea leaf weevil
- Silver flashing, mulch and flea beetle
- Set up slug and snail traps – beer or yeast in containers around susceptible plants

Monitoring and Observation

- Detective work! Observe your garden all year long
- Learn about your plants needs and the issues they might be prone to
 - Native habitat
 - Mature size and shape
 - Soil, sun and water needs
- Learn about common pest, weed and disease issues – **know their life cycles**
 - Complete and simple metamorphosis in insects
 - Stink Bugs – simple – egg to nymphs to adult
 - Imported Cabbage Worm Butterfly – complete – egg to larvae to pupae to adult
 - Annual, biennial and perennial weeds
 - Tap roots versus fibrous roots
 - Fungal, bacterial, viral diseases

- Learn to tell the difference between pests and beneficial insects
 - Pests damage your plants
 - Beneficial insects eat or parasitize pests
 - Some beneficial insects have life stages that also eat your plants – learn tolerance for these stages
- Keep a notebook – track your observations

Intervention

- Assess your tolerance levels for any given issue – clover in the lawn, rhododendron root weevil, aphids on kale
- Review plant placement guidelines – maybe plant is in the wrong place?
- Assess for a problem plant that needs to be removed
- Review your plant care practices – pruning, more or less water, fertilizer?
- Treat the issue
 - Cultural
 - Mechanical
 - Biological
 - Chemical

Cultural

- Adjust watering practice
- Prune out to provide air flow
- Use fertilizer if needed
- Remove mulch from base of plant
- Improve soil drainage
- Add compost to improve water retention

Mechanical

- Remove the pest – squish, toss, spear, salt, flick, spray with water
- Pull the weed – hand tools designed to pop out weeds, moisten soil before pulling, catch before they go to seed
- Many weeds are edible – learn which and eat your weeds!

Biological

- Employ beneficial insects – purchase and release or build habitat
 - Ladybeetles, green and brown lacewing, hoverflies, parasitoid wasps and flies, soldier beetles, minute pirate bugs, beneficial nematodes
- Pesticides developed using microbial agents
 - Btk or *Bacillus thuringiensis* subspecies *kurstaki* - controls tent caterpillar
 - Bti or *Bacillus thuringiensis israelensis* – controls mosquitoes
 - Developed from soil dwelling bacterium
 - Can be considered chemical control

Chemical

- Use as a last resort
- Use lowest toxicity products first
 - Soaps – Potassium salts of fatty acids – purchase or make
 - Oils – herb oils, dormant oil (petroleum based)
 - All pesticides can have off target harmful effects
 - Soap and oil are harmful to aquatic animals when they get into waterways
 - Not selective to the pest you are targeting – neonics and bees

- Choose certified organic products – USDA, WSDA, OMRI, Oregon Tilth and other certifying agencies
- Avoid toxic pesticides
- Read and follow all label instructions including mixing instructions, which plants you can apply to and for which pests
- Find the MSDS for each product you purchase

Creating a Pollinator Friendly Garden

Build Habitat

- Plant diverse sizes and shapes of plants
- Plant diverse species of plants
- Don't be overly tidy – leave some wild spaces for wildlife
 - Hollow reed stems for solitary bees
 - Seeded flowers for birds
 - Un-mulched ground for ground dwelling bees
 - Leave moss intact for bird nests
 - Provide larval food plants for butterfly caterpillars
 - Milkweed for Monarchs
 - Willow for Western Tiger Swallowtail
- Plant dense areas for shelter
- Provide snags, wood blocks, rock piles for basking, nesting and safe sites
- Provide a water source – puddles for butterflies, fountains or baths for birds

Plant to Attract Common Pollinators

- Birds - Hummingbirds – Anna's (year round) and Rufous, nectar plants
 - Tubular flowers –honeysuckle, snapdragon, sage, hollyhock

- Red flowers – fuchsia, flowering currant, weigela,
- Native plants – dogwood, madrona, twinberry, salmonberry
- Plant early to late bloom for Anna’s hummingbirds
- Butterflies and Moths – Day and night flyers, nectar plants
 - Short tubular flowers – mint, marigold, oregano, lupine
 - Fragrant flowers – lilac, lavender, dianthus, wallflower
 - Flat flowers – aster, angelica, dill, calendula
 - Native plants – maple, madrona, Douglas fir, salal, twinberry
- Bees – Solitary and social, ground and aerial nesters

Plant to Attract Other Beneficial Insects

- **Daisy Family**

Common Weeds

- Dandelion – edible perennial, tap root, indicates poor nutrition
- Cat’s Ear – perennial, matting in colonies, tap root, likes disturbance
- Moss – Indicates compacted soil, shade, moisture, low nutrition and low pH - birds make use of moss for nests - substitute with native plants or accept some moss
- Plantain – edible and medicinal perennial, tap root, indicates compaction
- Buttercup – creeping perennial, indicates moist and compact soil
- Clover – creeping perennial, fixes nitrogen and feeds grass, stays green – used to be included in seed mixes
- Daisy – self-seeding perennial, makes a nice companion in lawns
- Yarrow – medicinal perennial, indicates poor nutrition, dry soil, disturbed areas
- Sheep’s Sorrel – creeping perennial, taproot

- Ground Ivy – creeping perennial, indicates moist soil
- Self Heal – creeping perennial, indicates moist soil
- Speedwell – creeping perennial, indicates moist soil
- Annual Bluegrass – takes advantage of bare spots, looks like lawn grass until it blooms at short height
- Tall Fescue - clumping grass with large blades, makes large patches in lawn

Common Lawn Pests and Diseases

- Moles
 - Damage – Moles tunnel and make hills in lawns
 - Tolerance – Their presence indicates that your soil has life in it!
 - Management - Stamp down hills, runs, tolerate until they go deeper into ground in summer.
- Crane Fly
 - Damage - Larvae eat roots creating bare spots in the lawn
 - Tolerance – Do not treat until larvae reach numbers of more than 40 per square foot of lawn
 - Management – Improve drainage, attract predators like birds to your garden, let your chickens out on the lawn when larvae are present, reduce pesticides in the garden to encourage predaceous insects like ground beetles, apply nematodes as a bio-control, let lawn go golden in the summer.
- Red Thread
 - Damage – Causes large brown patches in the lawn
 - Tolerance – Does not do a lot of harm to the lawn, is mostly cosmetic.

- Management – Fertilize with slow release organic Nitrogen, add lime, improve drainage, raise mowing height to two inches

Resources

[Ecologically Sound Lawn Care for the Pacific Northwest](#), by David McDonald, Seattle, Seattle Public Utilities, @1999

Soil Best Management Practices for Washington State

<http://www.soilsforsalmon.org/how.htm>

Sprinkler Efficiencies

<http://cascadewater.org/irrigation.php>

Right Plant, Right Place, by Nicola Ferguson; New York, Fireside, © 2005

Great Plant Picks www.greatplantpicks.org

Go-Native King County <https://green2.kingcounty.gov/gonative/index.aspx>

King Conservation District Plant Sales <http://kingcd.org/programs-native-walk-up-sale.htm>

Garden Hotline www.gardenhotline.org 206-633-0224

Monday through Saturday 9:00 am to 5:00 pm