



Metro

Pesticides, IPM & Backyard Habitat Certification

Presented by Paul Sanford

5/30/2020

Overview

Metro and pesticides

IPM strategy

**Grow Smart Grow Safe & Backyard
Habitat certification**

Pesticide-free pledges and other resources

Pesticide-free gardening tips



What is Metro?



Regional government

Working with communities

**Creating a vibrant and
sustainable region for all**



Metro pesticide reduction and natural gardening education

Metro manages region's household hazardous waste

Pesticides among most toxic, expensive (\$600k/yr) and copious (270,000 lbs/yr)

Natural gardening program helps residents reduce use



Who uses pesticides? Survey says...*

About 2/3 of area residents use one or more chemical products on their lawn or garden

36% of residents use Round Up — 48% Adults 55+, 42% Latinx, 49% Republicans

39% use Weed and Feed - 52% Adults 55+, 54% people with income \$50-\$75

32% use chemical insect killer

36% use organic or less toxic products — 46% people with incomes \$75+,

40% women, 40% Democrats

Chemical product use is 15-20% more likely in Washington and Clackamas counties.



Who uses pesticides? Survey says...*

78% of Residents think having a chemically-free lawn or garden is at least somewhat important

Most important to women (87%) vs. men (69%)

Democrats (85%) vs. Republicans (68%)

Adults 55+ are the least likely to think it's "very important"

29% in Clackamas County say not very or not at all important



Appropriate use of pesticides?

Pesticides largely not necessary in home gardens except in special situations (e.g.: invasive weeds)

It's tricky to not harm resident plants and visiting wildlife, and to avoid risks to people, pets and waterways

If used, get a microscope and budget plenty of time to read the label and follow!



Use IPM strategy

Integrated Pest Management

...It's all about managing actual pest problems with the least collateral damage.

Decision-making process

Toolkit of methods integrated to achieve success



Keys step to IPM strategy

1. Focus on prevention and cultural methods (design problems away)

2. Identify pests and learn damage potentials and life cycles

3. Examine your goals and tolerances (do you need to do anything?)



Keys step to IPM strategy

4. Consider efficacy, cost, & risk of physical, biological and chemical methods (and only use chemicals if needed)



5. Monitor results to inform future



Bottom line of IPM strategy?

Focus on prevention

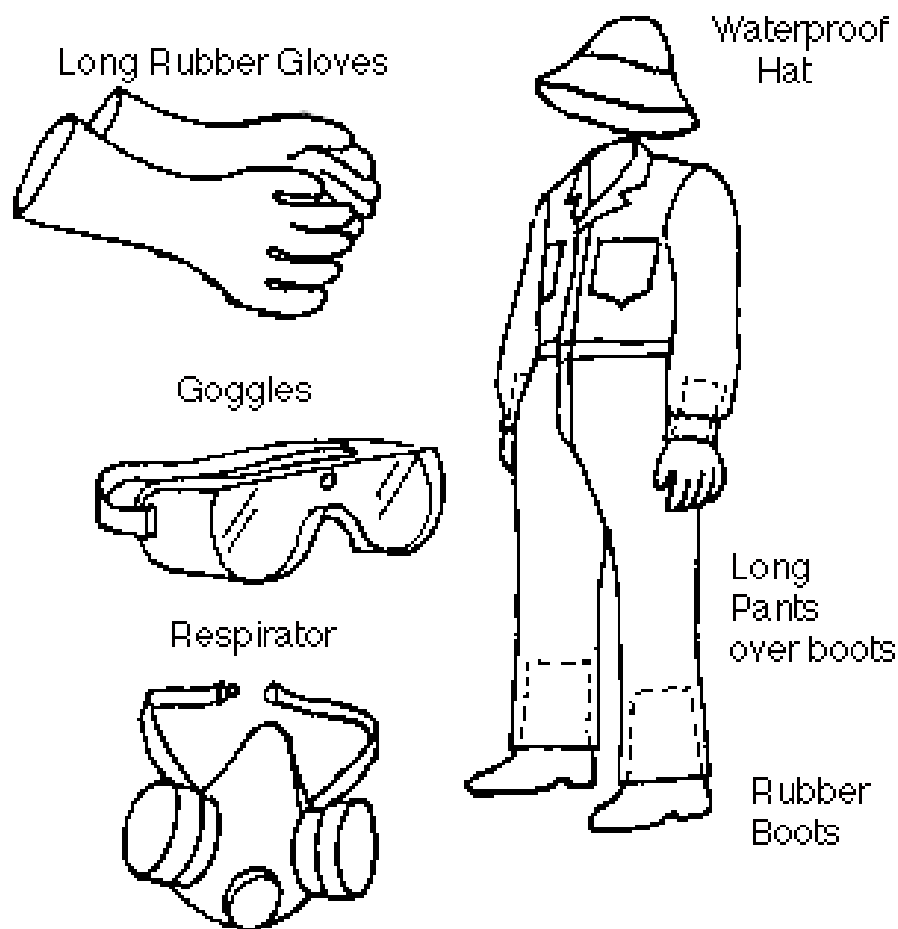
Know your “pests”

Use pesticides only if needed



Photo by Thomas Shahan
Oregon
Department
of Agriculture

If you do use pesticides



**Follow label
directions**

protect yourself

**and minimize
exposure to
others, to wildlife
and water ways**

Use GrowSmartGrowSafe.org

**Learn which pesticides are least hazardous
and which are allowed at each certification level**



A project of Thurston County and Washington Department of Ecology, with Metro and King County initial support

Use GrowSmartGrowSafe.org

[Home](#)
[About](#)
[Integrated Pest Management](#)
[Natural Yard Care](#)
[Pests](#)
[Good Bugs](#)
[Resources](#)
[Glossary](#)

Potential Hazards:

Low

Moderate

High

X

Unable to Find Useful Data

Product:

ALL

Active Ingredient:

ALL

EPA Number:

ALL

Disease Type:

ALL

Crop or Plant:

ALL

Reset Print

Products are sorted according to their hazard groups (Lowest, Low, Moderate and Highest Hazard), within each hazard group they are listed from lower to higher toxicity as indicated by the Signal Word (No Signal Word, Caution, Warning or Danger)

| Product Name | Active Ingredients | Signal Word | Human | Pet and Wildlife | Aquatic Life | Water Pollution |
|---|----------------------------------|-------------|-------|------------------|--------------|-----------------|
| Low Hazard | | | | | | |
| MOSS-ASIDE MOSS KILLER | POTASSIUM LAURATE | ! | | | | |
| ORTHO MOSS B GON LIQUID MOSS CONTROL R-SPRAY | POTASSIUM LAURATE | ! | | | | |
| SAFER BRND MOSS&ALGAE KILLER&SURFACE CLEANER R-T-S II | POTASSIUM LAURATE | ! | | | | |
| BLACK FLAG TERMIN-8 WOOD PRESERVATIVE-COPPER GREEN | COPPER NAPHTHENATE | ! | | | | |
| PHYTON 27 BACTERICIDE & FUNGICIDE -HOMEOWNER | COPPER SULFATE PENTAHYDRATE | ! | | | | |
| Moderate Hazard | | | | | | |
| PENASHIELD | DISODIUM OCTABORATE TETRAHYDRATE | ! | | | | |
| Highest Hazard | | | | | | |
| BAYER ADV DISEASE CONTROL/ROSES, FLOWERS & SHRUBS CONC | TEBUCONAZOLE | ! | | | | |
| BAYER ADV FUNGUS CONTROL /LAWNS R-T-SPRAY | PROPICONAZOLE | ! | | | | |
| BAYER ADV FUNGUS CONTROL /LAWNS R-T-SPREAD GRANULES II | PROPICONAZOLE | ! | | | | |
| BAYER ADV GARDEN DISEASE CONTROL/ROSES, FLOWERS&SHRUBS CONC | TEBUCONAZOLE | ! | | | | |

GSGS overall hazard rankings

What defines “Green Zone” “Yellow Zone” “Red Zone”?

EPA Minimum Risk Pesticides

Lowest Hazard - Products Exempt from EPA Registration

EPA has created a pesticide classification called "Minimum Risk Pesticides". All products that meet the EPA requirements for minimum risk pass Thurston County's review criteria. The toxicity and environmental fate data that is normally required for pesticide ingredient registration is waived by the EPA for these pesticides due to their perceived low risk.

Green Zone

EPA-Registered Pesticides

Low Hazard

Active ingredient is low in toxicity and environmental hazard. Referenced studies used in the review indicate that products within this category contain active ingredients that pass the Thurston County review criteria.

EPA-Registered Pesticides

Moderate Hazard

May contain an ingredient persistent with a high potential to move off the site of application (water pollution hazard), or exposure to active ingredient after application approaches the EPA's level of concern. Different products with the same active ingredient have potential exposures (based on application) that range from low to highest hazard. These ingredients meet Thurston County's "conditional" ranking.

Yellow Zone

EPA-Registered Pesticides

Highest Hazard




Contains an ingredient that is known to cause a significant animal toxicity hazard (known or possible carcinogen, chemical mutagen, reproductive or developmental toxicant), exposure to the active ingredient after application is close to or exceeds the EPA's level of concern to humans, animals, or fish, or is persistent with a high potential to bioaccumulate.

Red Zone

GSGS hazard categories

Human: carcinogenicity, mutagenicity, reproductive toxicity, developmental toxicity, risk from short- or long-term exposures.

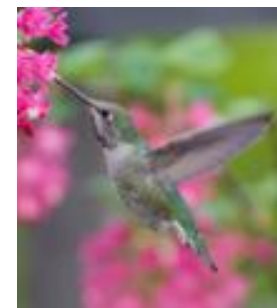
Rating symbols

-  The active ingredient is low in hazard for that category.
-  The active ingredient is rated moderate in hazard for that category.
-  The active ingredient is rated high in hazard for that category.
- X Useful data is not available.

Pet and Wildlife: toxicity to pets and wildlife from potential exposures following labeled uses



Aquatic Life: short- or long- term exposures to fish or other organisms from labeled uses



Water Pollution: combined hazards of mobility and persistence

Grow Smart, Grow Safe and Backyard Certification

Platinum



No use of RED or YELLOW zone chemicals. Always use IPM strategy. Take Metro No Pesticides Pledge.

Gold



No use of RED or YELLOW zone chemicals. Always use IPM strategy.

Silver



No use of RED zone chemicals. Use YELLOW zone chemicals only as part of an IPM strategy.

| Product Name | Active Ingredients | Signal Word | Human | Pet and Wildlife | Aquatic Life | Water Pollution |
|--|---|-------------|-------|------------------|--------------|-----------------|
| Low Hazard | | | | | | |
| MONTEREY ANT CONTROL | IRON PHOSPHATE (FEPO ₄); SPINOSAD | ! | ■ | X | ■ | ■ |
| NATURAL GUARD BY FERTI-LOME BUG, SLUG & SNAIL BAIT | IRON PHOSPHATE (FEPO ₄); SPINOSAD | ! | ■ | X | ■ | ■ |
| SLUGGO PLUS /ORGANIC GARDENING | IRON PHOSPHATE (FEPO ₄); SPINOSAD | ! | ■ | X | ■ | ■ |
| Moderate Hazard | | | | | | |
| AMDRO SNAIL BLOCK SLUG & SNAIL KILLER | SODIUM FERRIC EDTA | ! | ■ | ■ | ■ | ■ |
| DR.T-S SLUG & SNAIL KILLER | SODIUM FERRIC EDTA | ! | ■ | ■ | ■ | ■ |
| TURFKING SLUG & SNAIL BAIT II | SODIUM FERRIC EDTA | ! | ■ | ■ | ■ | ■ |
| Highest Hazard | | | | | | |
| BONIDE SLUG & SNAIL BAIT | METALDEHYDE | ! | ■ | ■ | ■ | ■ |
| CORRYS LIQUID SLUG & SNAIL CONTROL | METALDEHYDE | ! | ■ | ■ | ■ | ■ |
| CORRYS SLUG & SNAIL DEATH -3.25- | METALDEHYDE | ! | ■ | ■ | ■ | ■ |

A note about Glyphosate

A post-emergent, systemic, nonselective herbicide; trade names include RoundUp™

Now in GrowSmartGrowSave.org “Red Zone”

Probably carcinogenic to humans International Agency for Research on Cancer (IARC)

EPA and EU assessments disagree with IARC



Remains an important tool in the control of invasive weeds in our local natural areas

Triclopyr is a GSGS “yellow zone” alternative for broadleaf invasive plants

Pesticides of highest concern

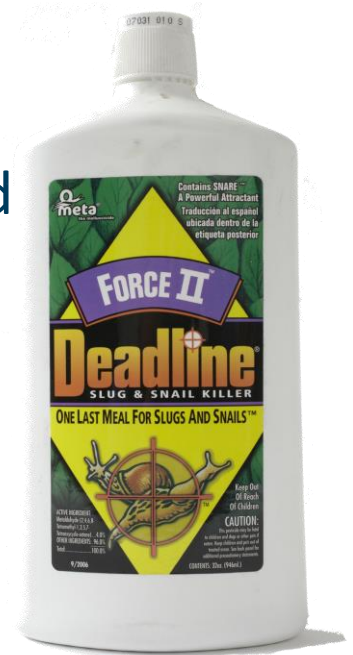
Most rodenticides difethialone, bromethalin, bromadiolone

Many insecticides especially carbaryl, malathion, permethrin, indoor bug bombs, and neonicotinoids

Many fungicides e.g. chlorothalonil

Most weed and feed e.g. 2,4-D

Some herbicides e.g. trifluralin, a selective herbicide



Potential Hazards:

Low

Moderate

High

X

Unable to Find Useful Data

Product:

ALL ▾

Active Ingredient:

ALL ▾

EPA Number:

ALL ▾

Disease Type:

ALL ▾

Crop or Plant:

ALL ▾

Reset

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| BONIDE FUNG ONIL MULTIPURPOSE | | | | | | |

Thurston County pesticide reviews



PUBLIC HEALTH AND SOCIAL SERVICES

Always working for a safer and healthier community

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SEARCH

GO

[EH Home](#) > [IPM](#) > [County Implementation](#) > [Terrestrial Herbicides](#)

IPM - TERRESTRIAL HERBICIDE REVIEWS

click on the active ingredient to read its review

◆ Potential hazard is low

⬢ Potential hazard is moderate

■ Potential hazard is high

▲ Unable to find useful data

| Pesticide Active Ingredient | Thurston County Rating | Human Toxicity | Other Mammals | Bird Toxicity | Bee Toxicity | Aquatic Toxicity | Mobility Hazard | Persistence Hazard | Bio-accumulation Hazard |
|---|------------------------|----------------|---------------|---------------|--------------|------------------|-----------------|--------------------|-------------------------|
| ammonium nonanoate | Passed | ◆ | ◆ | ◆ | ◆ | ■ | ◆ | ◆ | ◆ |
| ammonium salt of fatty acids | Passed | ◆ | ◆ | ◆ | ◆ | ■ | ◆ | ◆ | ◆ |
| clethodim | Passed | ◆ | ⬢ | ◆ | ◆ | ⬢ | ■ | ◆ | ◆ |
| clopyralid | Passed | ◆ | ◆ | ⬢ | ◆ | ◆ | ■ | ⬢ | ◆ |
| copper sulfate | Passed | ◆ | ⬢ | ⬢ | ◆ | ⬢ | ◆ | ■ | ⬢ |
| ferric sulfate | Passed | ◆ | ⬢ | ◆ | ▲ | ⬢ | ◆ | ■ | ◆ |
| ferrous sulfate | Passed | ◆ | ⬢ | ◆ | ▲ | ⬢ | ◆ | ■ | ◆ |
| ferrous sulfate (monohydrate) | Passed | ◆ | ⬢ | ◆ | ▲ | ⬢ | ◆ | ■ | ◆ |
| imazamox | Passed | ◆ | ◆ | ◆ | ◆ | ◆ | ■ | ⬢ | ◆ |
| iron HEDTA | Passed | ◆ | ◆ | ◆ | ◆ | ⬢ | ⬢ | ◆ | ◆ |
| metsulfuron methyl | Passed | ◆ | ◆ | ◆ | ◆ | ◆ | ■ | ⬢ | ◆ |
| pelargonic acid (nonanoic acid) | Passed | ◆ | ◆ | ▲ | ◆ | ⬢ | ⬢ | ◆ | ◆ |
| peroxsulam | Passed | ⬢ | ◆ | ◆ | ◆ | ◆ | ■ | ⬢ | ◆ |
| potassium salt of fatty acids | Passed | ◆ | ◆ | ◆ | ◆ | ■ | ◆ | ◆ | ◆ |

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[Terrestrial Herbicide Reviews](#)
[Aquatic Herbicide Reviews](#)
[Fungicide Reviews](#)
[Insecticide Reviews](#)
[Minimum Risk Pesticide Reviews](#)
[Glossary](#)

[Land Use Review](#)
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DISEASE CONTROL & PREVENTION

SOCIAL SERVICES

THURSTON THRIVES

Thurston chemical review PDFs

trifluralin

Review Date: 06/24/2010
CAS #: 1582-09-8

| | |
|---|---|
| Type | Trifluralin is a selective pre-emergent herbicide. |
| Controls | Controls annual grasses and broadleaf weeds on food crops and non-crop areas including residential sites. |
| Mode of Action | Trifluralin is a dinitroaniline herbicide that enters plants through developing roots and stops plant cells from dividing and elongating (Reference 1). |
| Thurston County Review Summary: Herbicides containing trifluralin as an active ingredient fail the Thurston County review process because they are rated as high in hazard for human toxicity and for the potential to cause adverse effects to small animals using treated grass, insects, and seeds for food. Trifluralin is also considered a skin sensitizer. Trifluralin is classified as a possible human carcinogen by the EPA and is perceived as having the potential to cause endocrine disruption. Trifluralin is not likely to move off the site of application with rain or irrigation water, but it is rated as high in hazard for persistence (likely to be present at over half the applied concentration more than 100 days), and has a moderate potential for the hazard of bioaccumulation. | |

MOBILITY

| Property | Value | Reference | Value Rating |
|--|----------|-----------|-----------------|
| Water Solubility (mg/L) | 0.2 mg/L | 3 | Low |
| Soil Sorption (Kd=mg/Lg) | 55 - 155 | 1 | Moderate to low |
| Organic Sorption (Koc=mg/Lg) | 8,765 | 3 | Low |
| Mobility Summary: Trifluralin is not very soluble in water and binds strongly to soil containing organic matter but only adheres moderately to soil with little or no organic matter. The hazard of trifluralin to move off the site of application with rain or irrigation water is rated as low. | | | |

PERSISTENCE

| Property | Value | Reference | Value Rating |
|--|---------|-----------|--------------|
| Vapor Pressure (mm Hg) | 0.00007 | 1 | Moderate |
| Biotic or Aerobic Half-life (days) | 181 | 3 | High |
| Abiotic Half-life (days) | 181 | 3 | High |
| Terrestrial Field Test Half-life (days) | 170 | 3 | High |
| Hydrolysis Half-life (days) | Stable | 3 | High |
| Anaerobic Half-life (days) | 25 - 59 | 1 | Moderate |
| Aquatic Field Test Half-life (days) | 8 - 20 | 1 | Moderate |
| Persistence Summary: Trifluralin has a relatively high vapor pressure for an herbicide, which makes it vulnerable to dissipating into the air. However, this herbicide needs to be incorporated into the soil to work effectively (which minimizes air dissipation). Field testing and laboratory testing indicate that it takes well over 100 days for trifluralin to degrade to half of its applied concentration in soil. The persistence hazard for trifluralin is rated high. | | | |

BIOACCUMULATION

| Property | Value | Reference | Value Rating |
|---|-----------|-----------|--------------|
| Bioaccumulation Factor | Not found | | |
| Bioconcentration Factor | 5,674 | 3 | High |
| Octanol/Water Partition Coefficient | 5.27 | 3 | High |
| Bioaccumulation Summary: Trifluralin is not very soluble in water and would rather bind to fats and oil than combine with water. Bioconcentration studies indicate that it is likely to accumulate in fish tissue, although 8 to 88% of the chemical was eliminated when the fish were moved to clean water (depuration). Mammal metabolism studies with trifluralin indicate that very little of the ingested chemical is absorbed. About 80% of the absorbed chemical is excreted in the feces and what is left can be metabolized into 40 different chemicals that are eliminated in the urine within 3 days. Due to the metabolism and depuration studies, the hazard for bioaccumulation is rated as moderate. | | | |

ACUTE WILDLIFE TOXICITY VALUES and Risk Assessment

| Test Subject | Value | Reference | Value Rating |
|----------------------------|------------------|-----------|--------------|
| Mammalian (LD50) | >5,000 mg/kg | 1 | Low |
| Avian (LD50) | >2,000 mg/kg/day | 1 | Low |
| Honey bee or insect (LD50) | >100 ug/bee | 1 | Low |
| Annelids-worms (LC50) | >500 mg/kg | 1 | Low |
| Fish (LC50) | 0.041 ppm | 1 | High |
| Crustacean (LC50) | 0.56 ppm | 1 | High |
| Mollusk (LC50) | Not found | | |
| Amphibian (LD50 or LC50) | Not found | | |

Acute Toxicity Testing and Ecotoxicity Summary:

Single-dose toxicity testing indicates that trifluralin is low in toxicity to mammals, birds, insects, and worms. It is considered highly toxic to fish and other aquatic organisms. Use of herbicides containing trifluralin can result in concentrations on grasses, seeds and insects that could adversely impact small mammals feeding on them. The EPA also concluded that fish and other aquatic organisms may be adversely affected by the use of trifluralin herbicides.

ACUTE HUMAN TOXICITY - Risk Assessment

| Subject and Scenario | Route | Dose of Concern | Exposure | Margin of Safety | Reference | Value Rating |
|----------------------|-------|-----------------|----------|------------------|-----------|--------------|
| Not calculated | | | | | | |
| Not calculated | | | | | | |
| Not calculated | | | | | | |
| Not calculated | | | | | | |

Acute Toxicity Risk Assessment Summary:

Risk assessments were not calculated for acute dietary, short-term (or intermediate-term) occupational or residential exposures because the EPA did not identify any endpoints to evaluate (Reference 1).

Risks to pollinators



Photo: Kathy Shearin

The Challenge We Face...

Neonicotinoid insecticides:

Less toxic to mammals than some other insecticides and considered reduced risk...

Most widely used insecticides in the world

However...

Can be persistent over time in plants and soil

Even tiny doses have an effect

Prophylactic use, without IPM, is the norm in many crops



Impacts of Neonicotinoids: Not just bees



Also impacting other beneficial insects

Neonicotinoid sprays are lethal on contact to parasitoid wasps and predators

Contaminated nectar reduces survivorship of lady beetles and lacewings

Consumption of corn rootworm eggs sprayed with imidacloprid increased mortality of minute pirate bugs

Residues in soil are harmful to ground beetles and rove beetles

BEYOND THE BIRDS AND THE BEES

Effects of Neonicotinoid Insecticides on
Agriculturally Important Beneficial Invertebrates

Jennifer Hopwood, Scott Hoffman Black, Mace Vaughan, and Eric Lee-Mäder



THE XERCES SOCIETY
FOR INVERTEBRATE CONSERVATION

Neonicotinoids for ornamental plants

Also used on ornamental plants and lawns

Level of application is **much** greater than on crops (up to 120x), which **increases** the risk to pollinators



Photo by Thomas Shahan
Oregon
Department
of Agriculture



Photo: Matthew Shepherd

How can clients take the pledge?

In person (when pledge facilitator has ladybug signs)



Online oregonmetro.gov/tools-living/yard-and-garden/garden-pledge

By mail



**My healthy lawn
and garden pledge**

I will do my best to keep my home and community safe.

☐ I pledge to **reduce** my use of garden pesticides,
including weed and feed.

☐ I pledge to **stop** using garden pesticides, including
weed and feed. (Get a free yard sign.)

☐ I am **already pesticide-free** in my garden.
(Get a free yard sign.)

Name* _____

Address _____
(For sending yard sign for mailed-in pledges)

City* _____ Zip* _____

Neighborhood _____

Email _____

Signature* _____ Date _____
(For Metro's home and garbage news)

*Required information
Program area residents only; one pledge per household; while supplies last.
Contact Metro at 503-234-3000 for more information.



Inside: Find coupons and resources,
and take the healthy lawn and garden pledge.



Metro



Oregon State University
Extension Service

Pesticide free gardening tips



Build better soil

**Plant right for
your site**

Water wisely

**Use tools, not
toxics**

Let nature feed your soil



**Fertilize only if necessary
...and stick with slow release**



Plant right for your site ...to avoid a fight



Match your plants to the soil, sun and moisture of your site

Group plants of similar needs

Add some natives and habitat

Grow food

Water wisely



Use tools, not toxics



Never pull and run.

Always overseed (or plant, or mulch).



Let birds eat your bugs



Let bugs eat your slugs



GrowSmartGrowSafe.org

Helping people understand risks of pesticides



A project of Thurston County and Washington Ecology, with Metro and King County initial support

Feel free to hand out Metro pubs

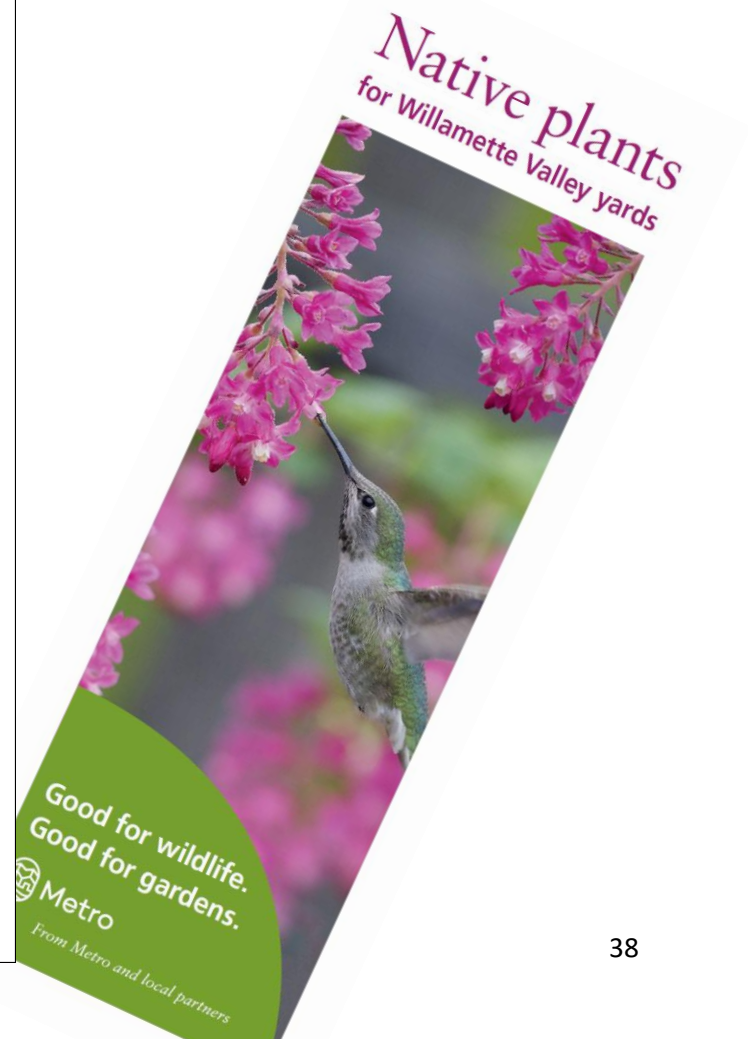


Composting, recycling and composting with worms

It's easy
to make
your own
compost!



Metro | Healthy homes. Healthy families.



oregonmetro.gov/garden

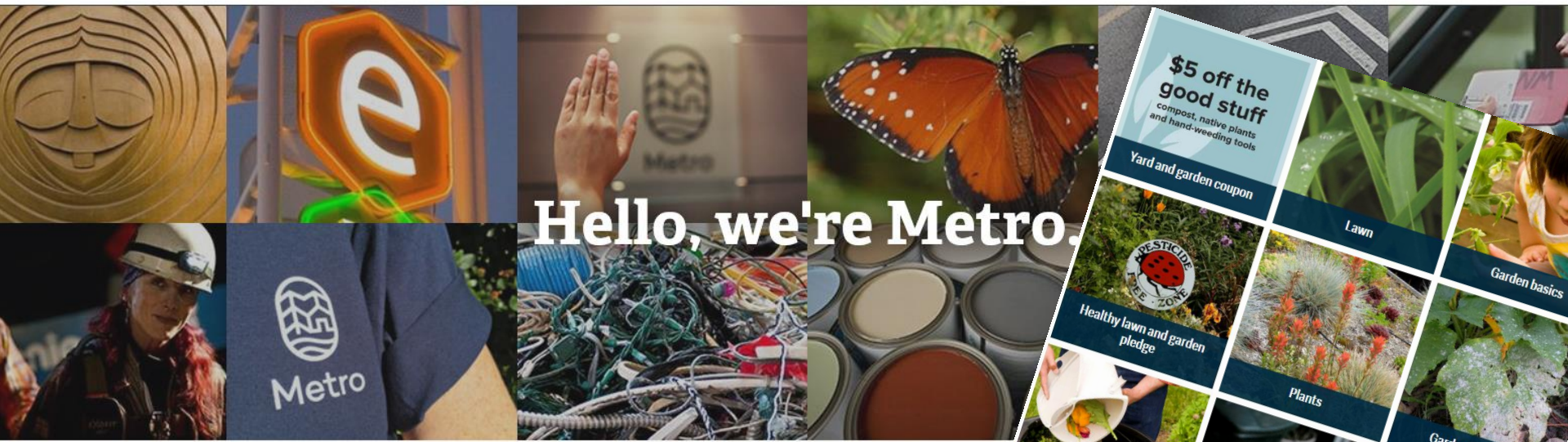


Parks + Venues

Tools + Services

What's Happening

Metropedia



Hello, we're Metro.

SHAPE THE FUTURE



How can we create a better future for greater Portland? Add your voice to decisions that affect your community.

extension.oregonstate.edu/mg/metro



OSU Extension Service

Enter keywords to search...

Q Search

TOPICS GET INVOLVED ABOUT FIND US

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Volunteer Portal - Metro Area

Educational Events Calendar

How-to maintain active OSU
Master Gardener status

Training Videos

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Videos

Share on



ipm.ucanr.edu

UNIVERSITY OF CALIFORNIA AGRICULTURE & NATURAL RESOURCES

UC IPM

Statewide Integrated Pest Management Program

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*Solve your pest
problems with
UC's best science*

What's New

- **Pest Alert!**
[Agriculture: Peach Root-Knot Nematode Pest Alert. New nematode to California.](#)
- [Green Bulletin: Winter 2019](#)
- [Ag Pest Management: Dry Beans, Onion and Garlic and Strawberry revised](#)
- [Pest Notes: Ground Squirrel, Brown Recluse and Other Recluse Spiders, and Asian Citrus Psyllid and Huanglongbing Disease revised](#)
- [Retail Nursery & Garden](#)

MAKE A GIFT | *Support UC IPM's mission to make integrated pest management the way to manage pests*

Home, Garden, Turf & Landscape Pests



Agricultural Pests



xerces.org/bringbackthepollinators

[Our Work](#)[Get Involved](#)[Resources](#)[News](#)[About](#)

Bring Back the Pollinators Campaign

Take action today!

It's easy to **Bring Back the Pollinators** with these four simple steps:



Flowers provide the nectar and pollen resources that pollinators feed on. Growing the right flowers, shrubs, and trees with overlapping bloom times will support pollinators from spring through fall.



A **home** for growing pollinators is essential. You can leave patches of bare ground and brush piles or install nesting blocks, and plant caterpillar host plants.



Pesticides are harmful to pollinators, especially insecticides. Herbicides reduce food sources by removing flowers from the landscape.



Let your friends and neighbors know you're providing habitat with a **pollinator habitat sign**. You can also sign the **Pollinator Protection Pledge!**

Newsletter

Sign up for our newsletter to receive up to date information about our programs and events.

Contact Us

[Email us](#) with your questions and comments about pollinator conservation.

Learn About Your **Landscape**:

Agriculture

Organic Farms

Gardens

Natural Areas and Rangelands

Parks and Golf Courses

Roadsides

Schools

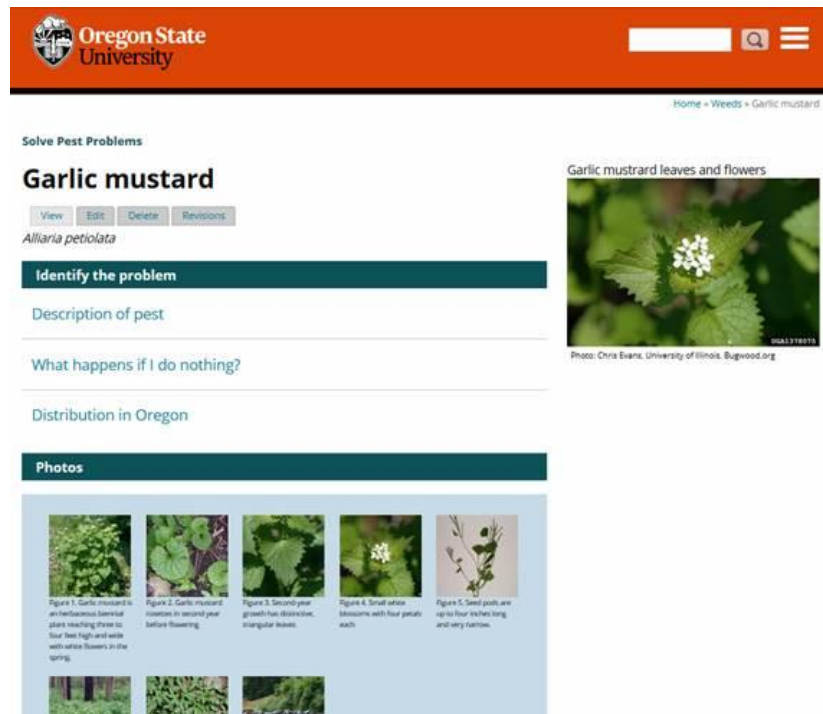
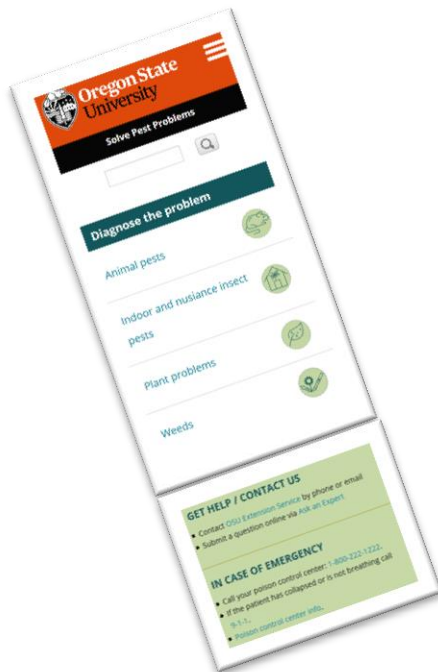
Take Action!



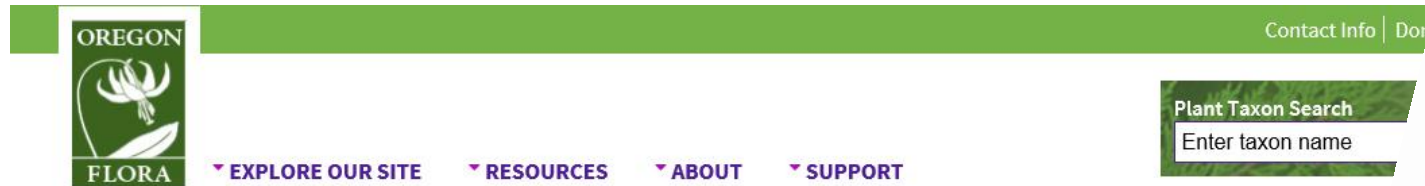
For region specific information, visit the [Pollinator Conservation Resource Center!](#)

SolvePestProblems.org

Under development by OSU with support from dozens of agencies and organizations in our region and across state. Planned initial launch in 2021



OregonFlora.org to launch new gardening portal this year!



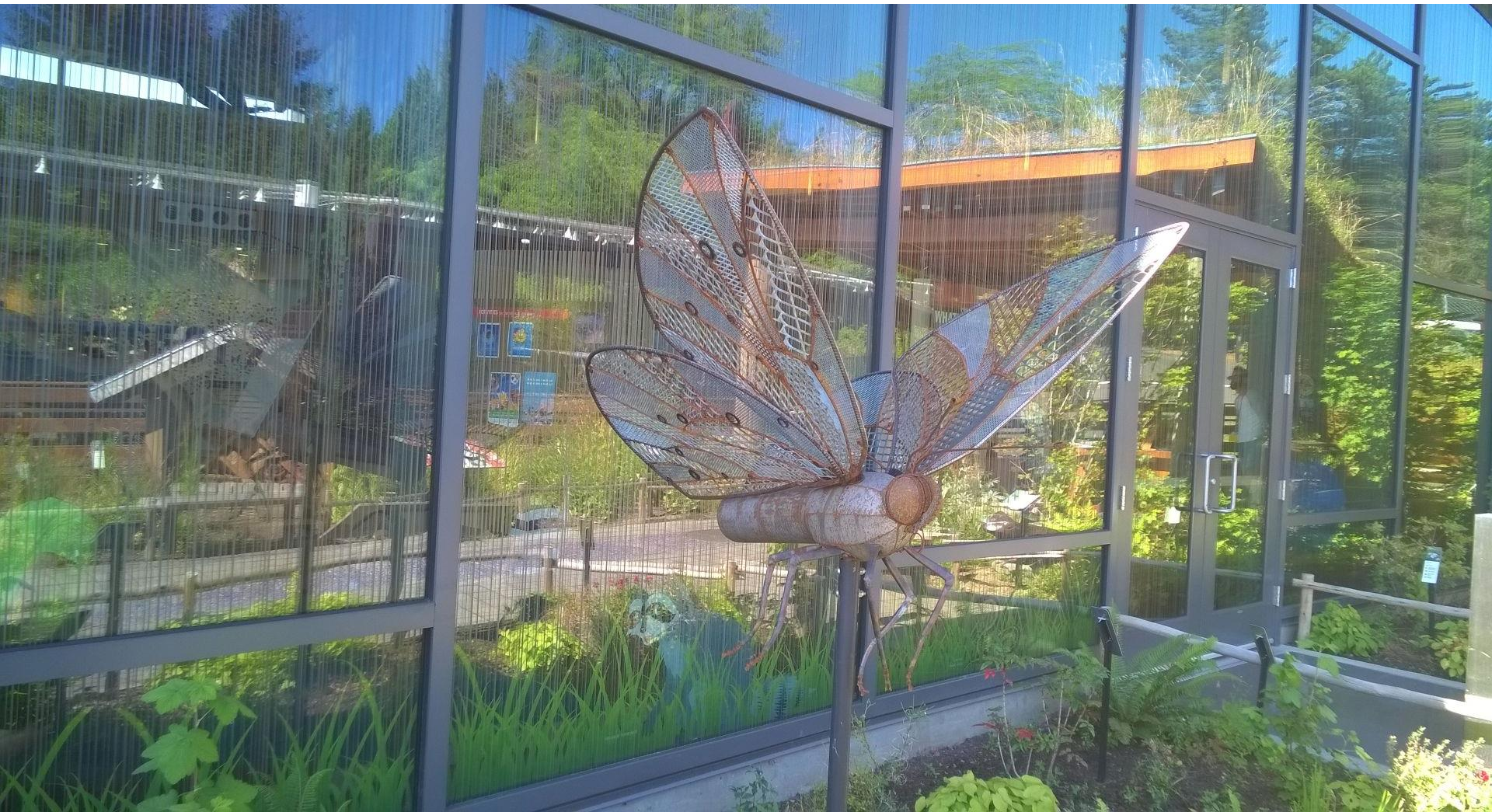
Oregon Zoo Wildlife Garden



Oregon Zoo Wildlife Garden



Oregon Zoo Wildlife Garden



Oregon Zoo Wildlife Garden



Thank you!

for your commitment to community education

for promoting habitat gardening

for helping residents reduce unnecessary pesticide use

Together we're making our region GREAT!



Arts and events
Garbage and recycling
Land and transportation
Oregon Zoo
Parks and nature

oregonmetro.gov