Pesticides, IPM & Backyard Habitat Certification

Metro

Presented by Paul Sanford

3/30/2019

Overview

- Metro and pesticides
- IPM strategy
- Grow Smart Grow Safe & Backyard certification
- Pesticide-free pledges and other resources
- Pesticide-free gardening tips

What is Metro?

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% Hispanics, 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

Let’s keep it real…

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 – say what?

…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)

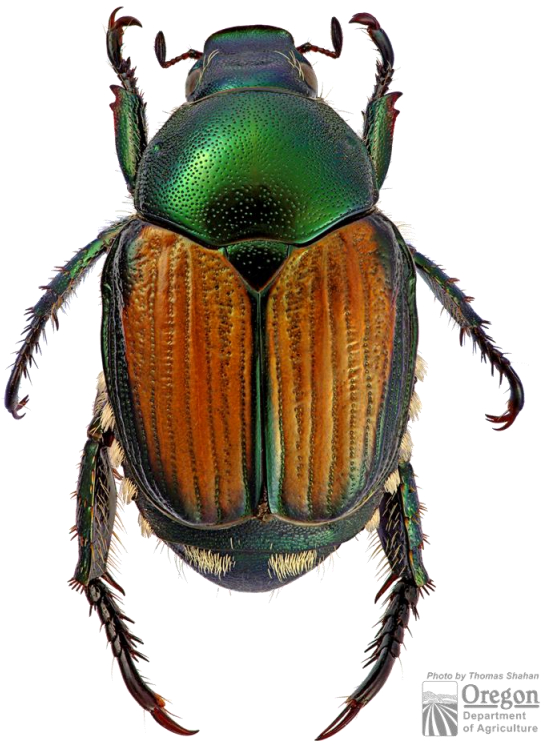
5. Monitor results to inform future

Bottom line of IPM strategy?

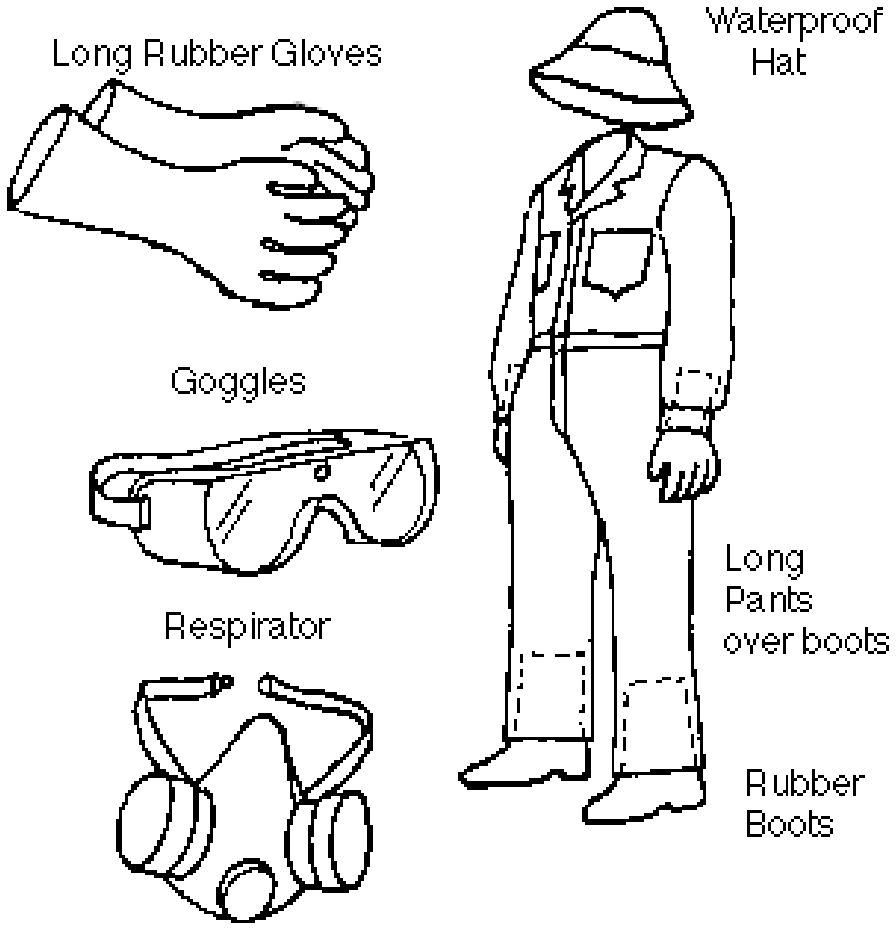
Focus on prevention

Know your “pests”

Use pesticides only if needed



If you do use pesticides



Follow label directions

protect yourself

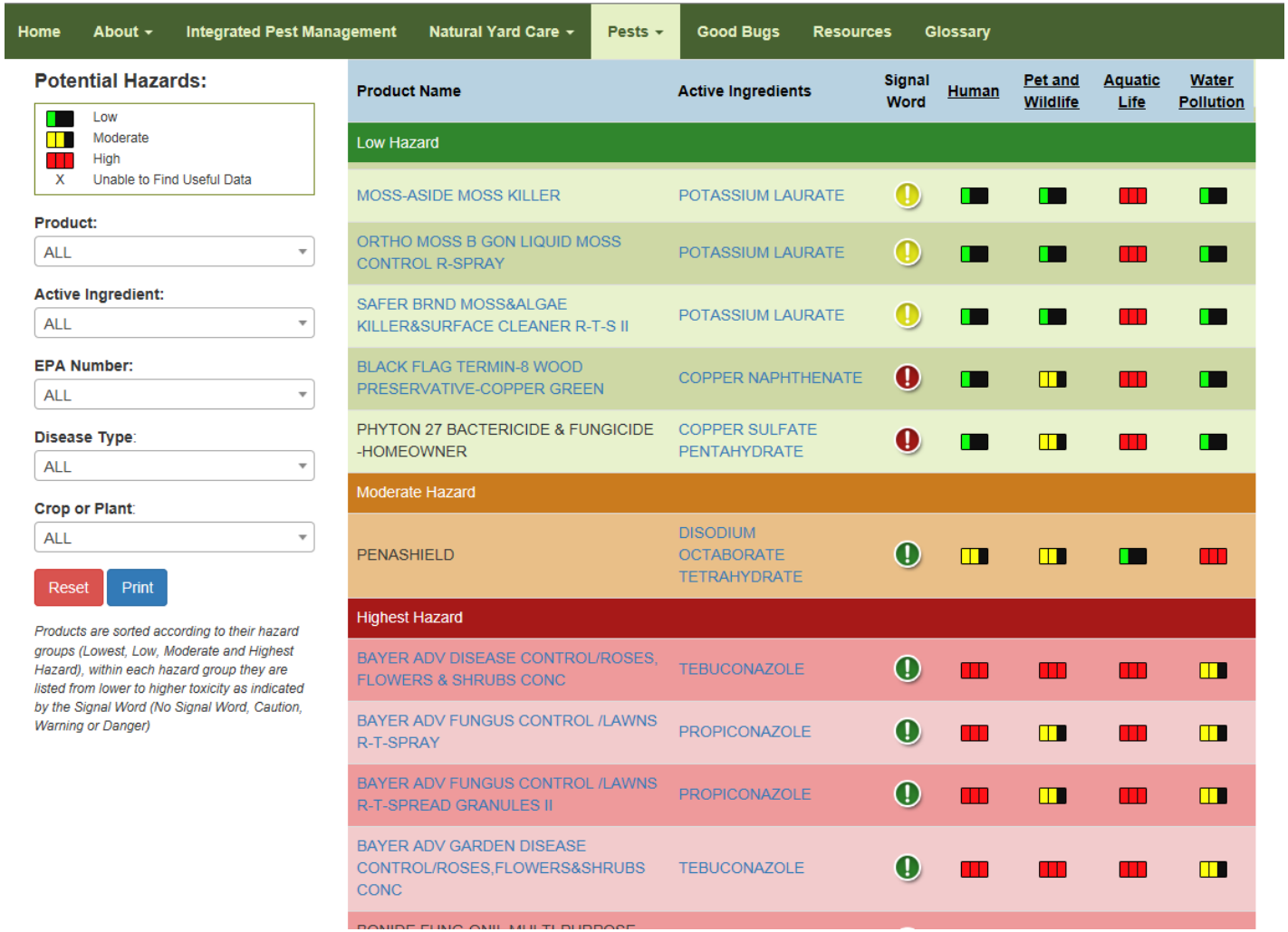
and minimize exposure to others, to wildlife and water ways

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



GSGS overall hazard rankings

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

EPA Minimum Risk Pesticides

Lowest Hazard - Products Exempt from EPA Registration

Green Zone

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.

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

Yellow Zone

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, or 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.

EPA-Registered Pesticides

Highest Hazard

Red Zone

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; is persistent with a high potential to bioaccumulate.

GSGS hazard categories

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

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

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.

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 (FEPO4); SPINOSAD	!		X		
NATURAL GUARD BY FERTI-LOME BUG, SLUG & SNAIL BAIT	IRON PHOSPHATE (FEPO4); SPINOSAD	!		X		
SLUGGO PLUS /ORGANIC GARDENING	IRON PHOSPHATE (FEPO4); 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

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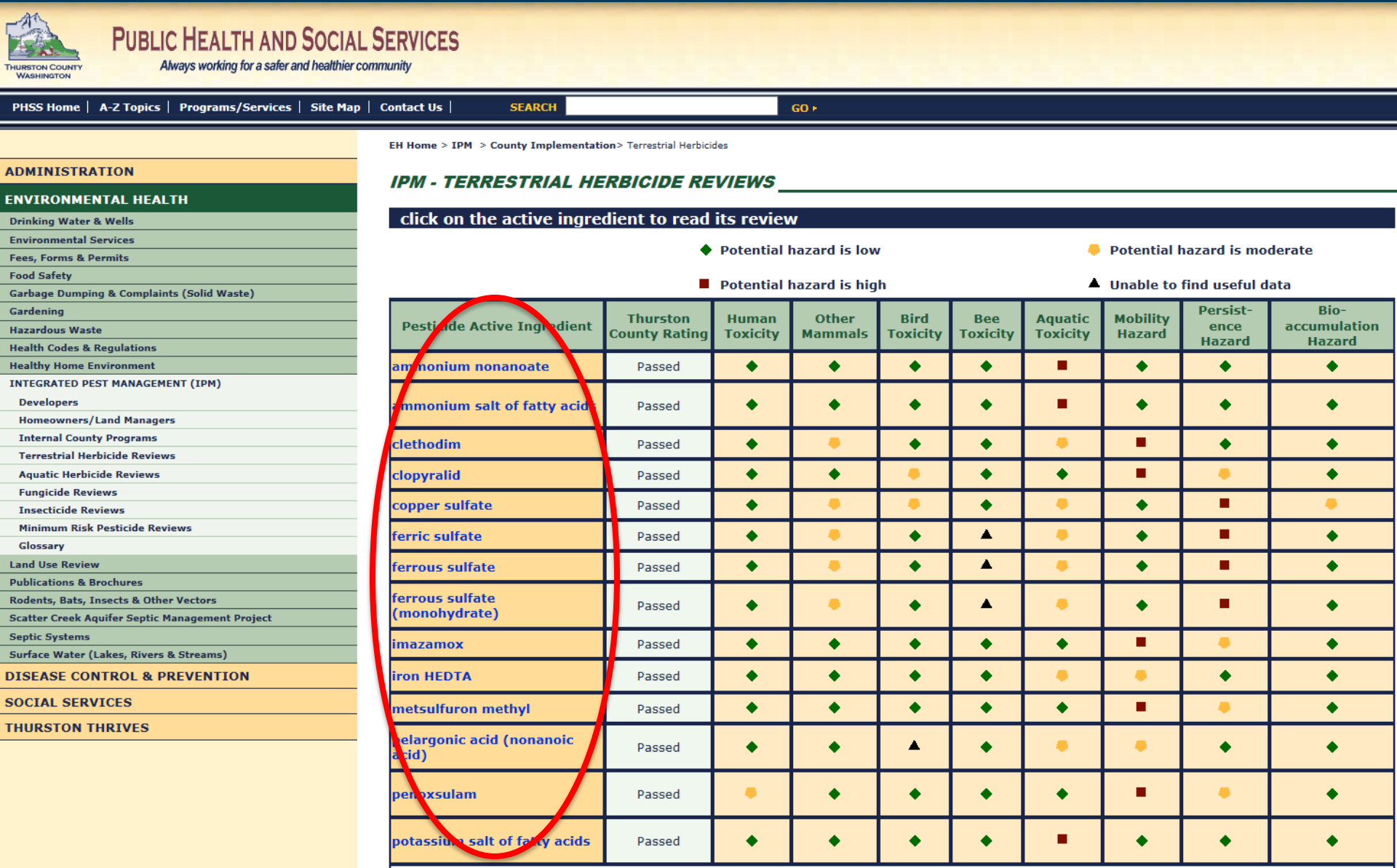
Products are sorted according to their hazard groups (Lowest, Low, Moderate and Highest Hazard), within each hazard group they are listed from lower to higher toxicity as indicated by the Signal Word (No Signal Word, Caution, Warning or Danger)

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

Thurston County pesticide reviews



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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	Bioaccumulation 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	◆	◆	▲	◆	●	●	◆	◆
penoxsulam	Passed	●	◆	◆	◆	◆	■	●	◆
potassium salt of fatty acids	Passed	◆	◆	◆	◆	■	◆	◆	◆

Thurston chemical review PDFs

trifluralin

Review Date: 05/24/2010
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 for 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=mL/g)	55 - 155	1	Moderate to low
Organic Sorption (Koc=mL/g)	8,765	3	Low

Mobility Summary:

Trifluralin is not very soluble in water and binds strongly to soil containg 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 indicates 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 metabolised 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
Annelida-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…

XERCES SOCIETY for Invertebrate Conservation

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

Photo: Regina Hirsch

Impacts of Neonicotinoids: Not just bees

XERCES SOCIETY for Invertebrate Conservation

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

Neonicotinoids for ornamental plants

XERCES SOCIETY
for Invertebrate Conservation

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

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

I can do this!

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.

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

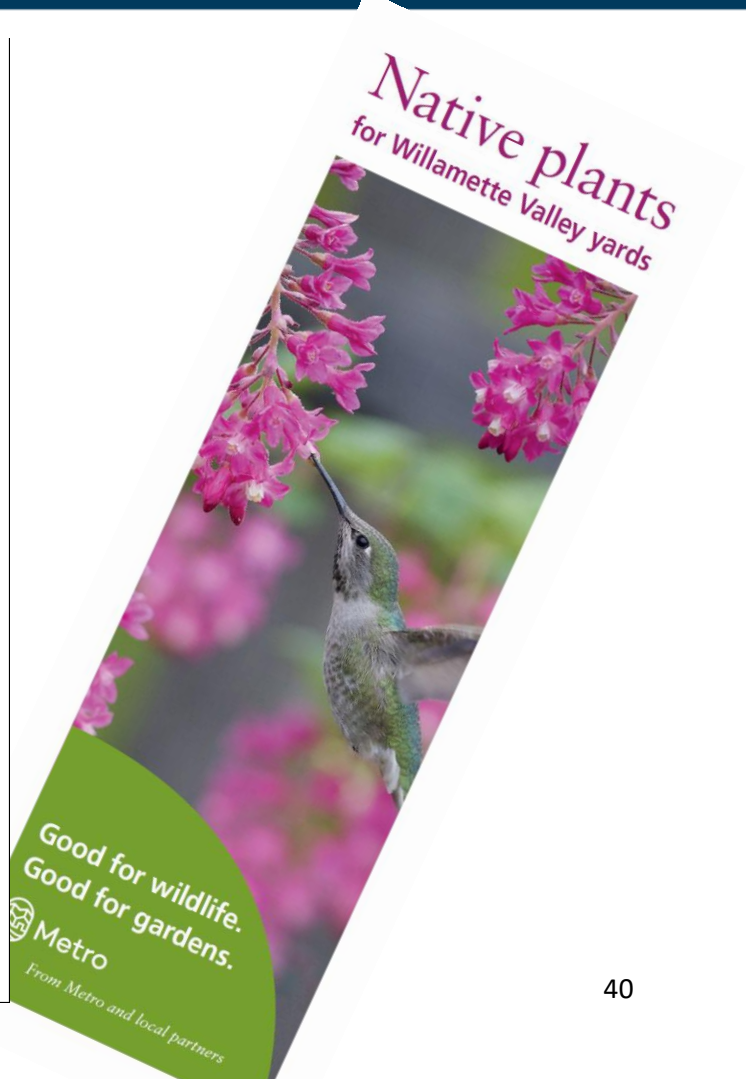
Let bugs eat your slugs

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



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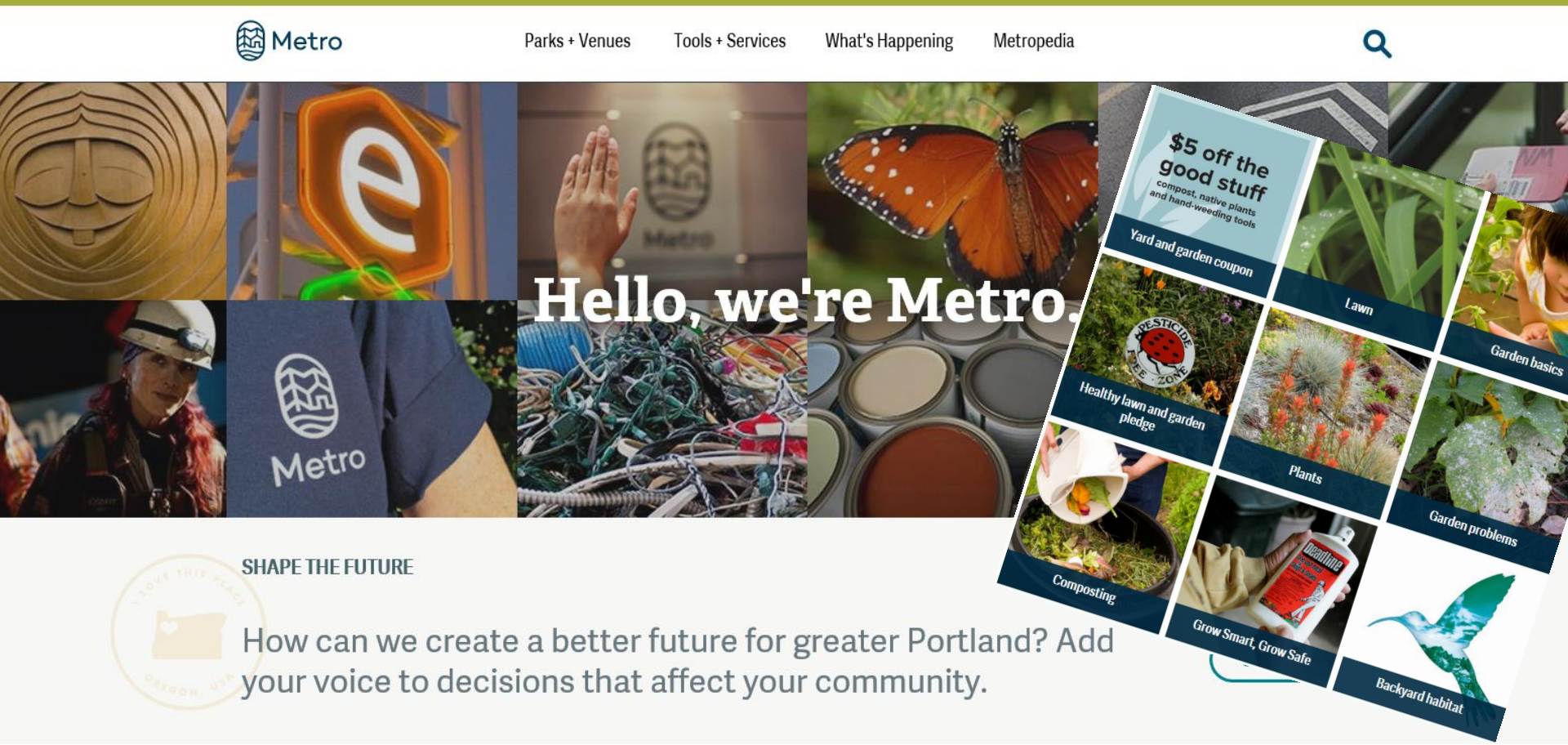

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ipm.ucanr.edu

xerces.org/bringbackthepollinators

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for Invertebrate Conservation

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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!

For region specific information, visit the Pollinator Conservation Resource Center!

Newsletter

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

Email

Submit

Contact Us

Email us with your questions and comments about pollinator conservation.

Learn About Your Landscape:
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Organic Farms
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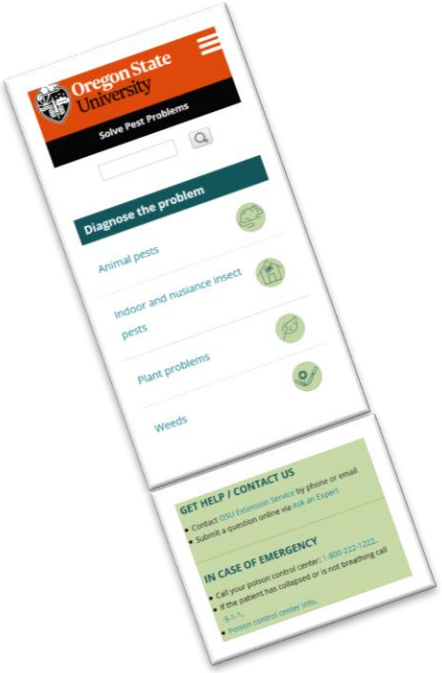
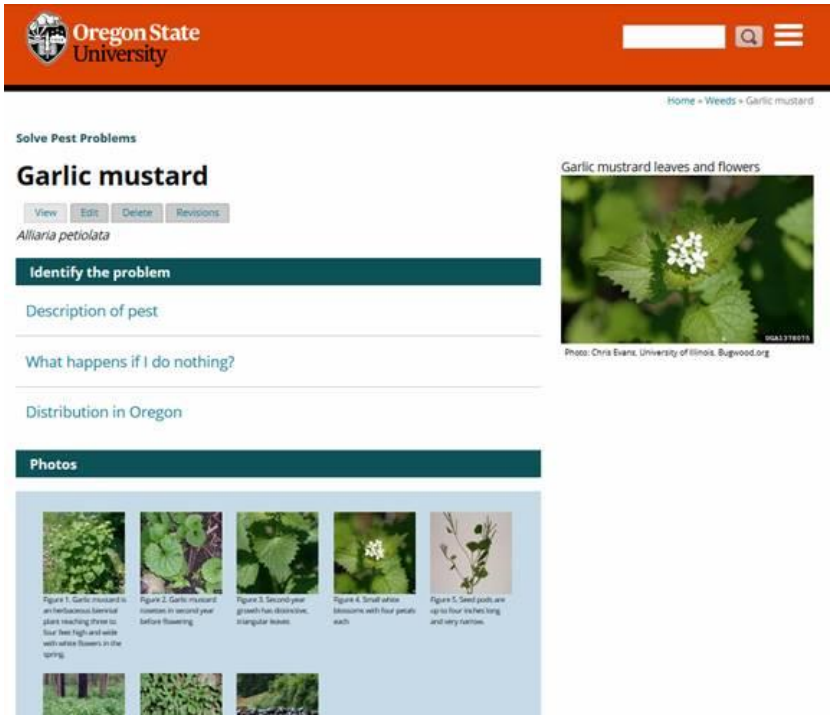
Take Action!

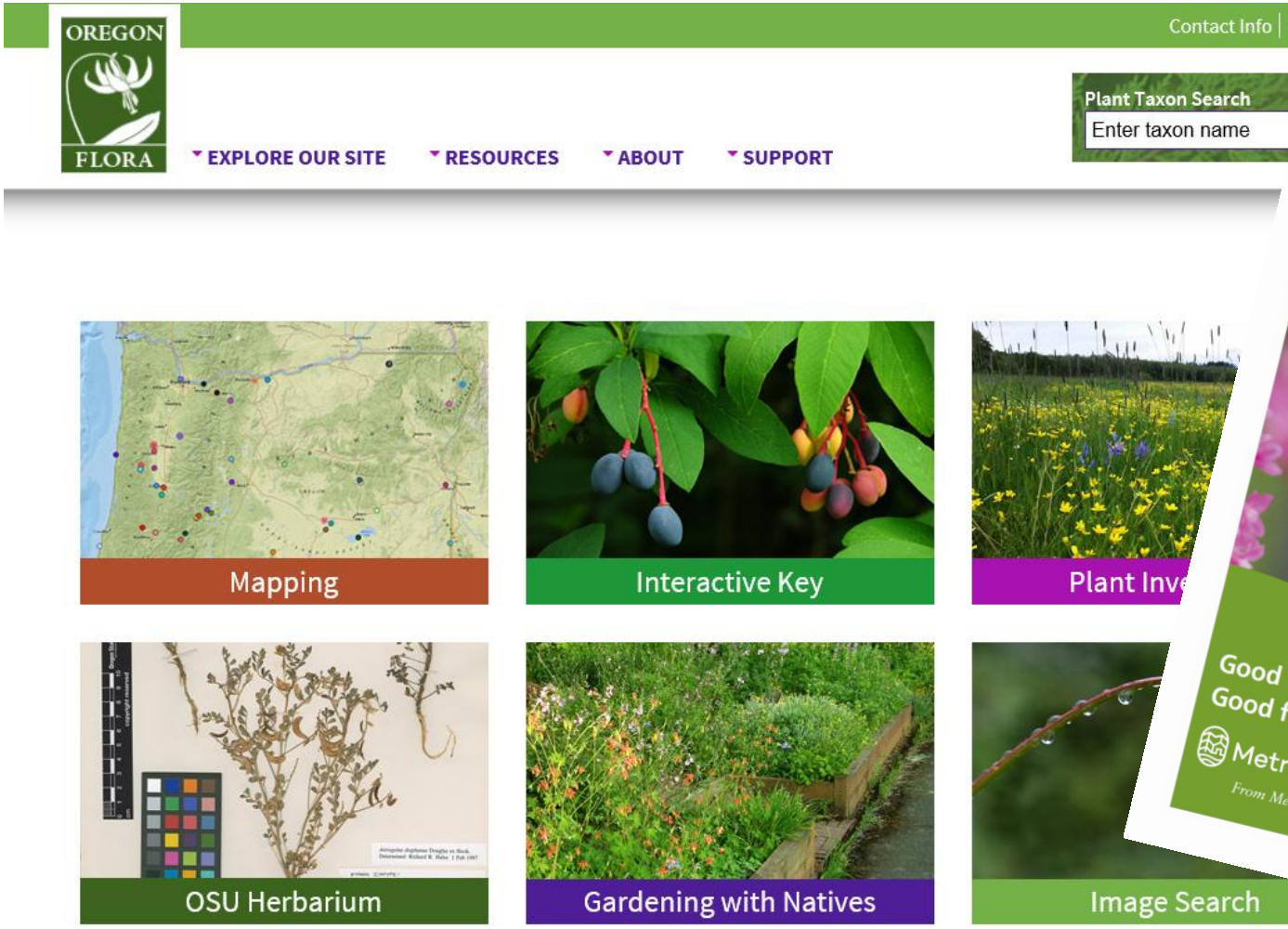
SolvePestProblems.org

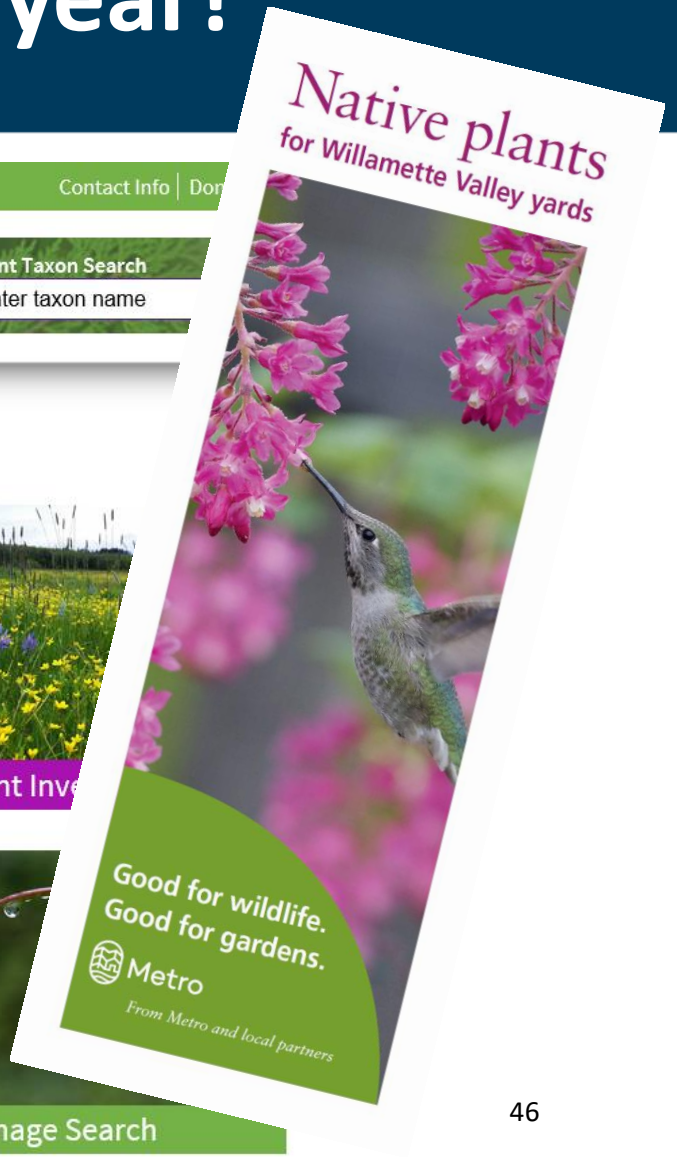
Under development by OSU with support from dozens of agencies and organizations in our region and across state. Planned initial launch in June, 2019





OregonFlora.org to launch new gardening portal this year!





Oregon Zoo Wildlife Garden

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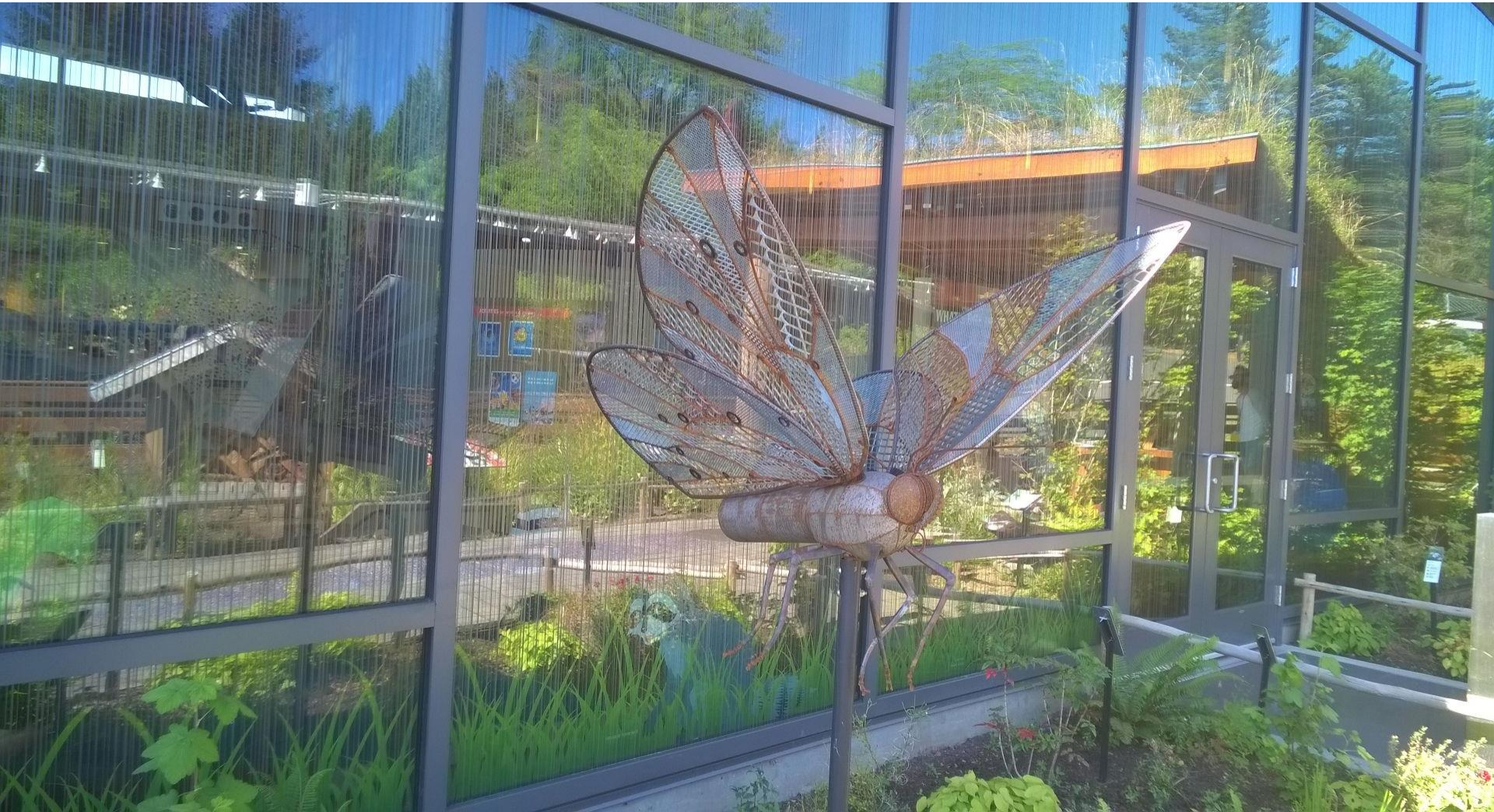

Oregon Zoo Wildlife Garden

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!

Metro

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Garbage and recycling
Land and transportation
Oregon Zoo
Parks and nature

oregonmetro.gov