

A photograph of a garden bed. In the foreground, a large, hollowed-out log is stacked on top of another log. The log has a large, irregular hole through it. The garden bed is covered in various types of moss, including bright green and greyish-green varieties. There are several small pink flowers scattered throughout the scene. The background shows more of the garden bed with rocks and more moss.

Pesticide Impacts and Scary IPM lessons!

Northwest Center for Alternatives to Pesticides
Megan Dunn
Fall 2018

Who is NCAP?

The Northwest Center for Alternatives to Pesticides (NCAP) works to protect community and environmental health and inspire the use of ecologically sound solutions to reduce the use of pesticides.



What Are Pesticides?

Any agent that is designed specifically for or effectively used to kill an organism that is deemed a pest.

Herbicides, insecticides, rodenticide and fungicides are all pesticides.

Which ones are we concerned about?

Complex, synthesized chemical agents that represent a persistent toxic threat within a given ecosystem. (Conventional chemical pesticides - organophosphates, carbamates, organochlorines, pyrethroids.)

Pesticides are hazardous to human health

Common pesticide injuries include:

- nerve damage
- lung damage
- loss of reproductive abilities
- disruption of immune and endocrine systems
- birth defects
- cancer

Looking at just 27 of the most commonly used pesticides

15 have been classified as carcinogens (300 million pounds)

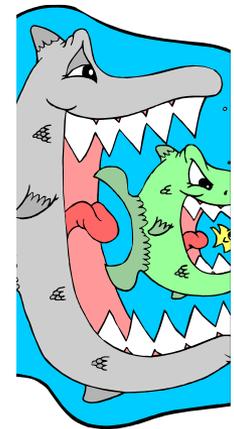
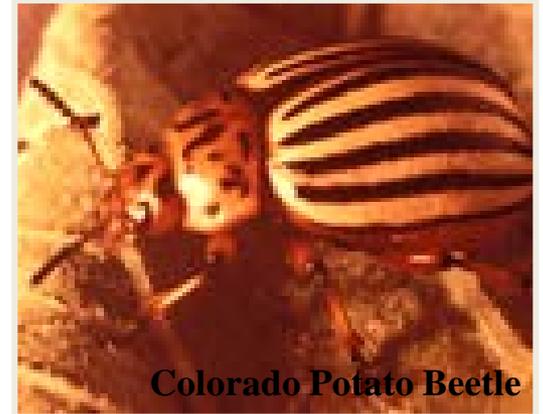
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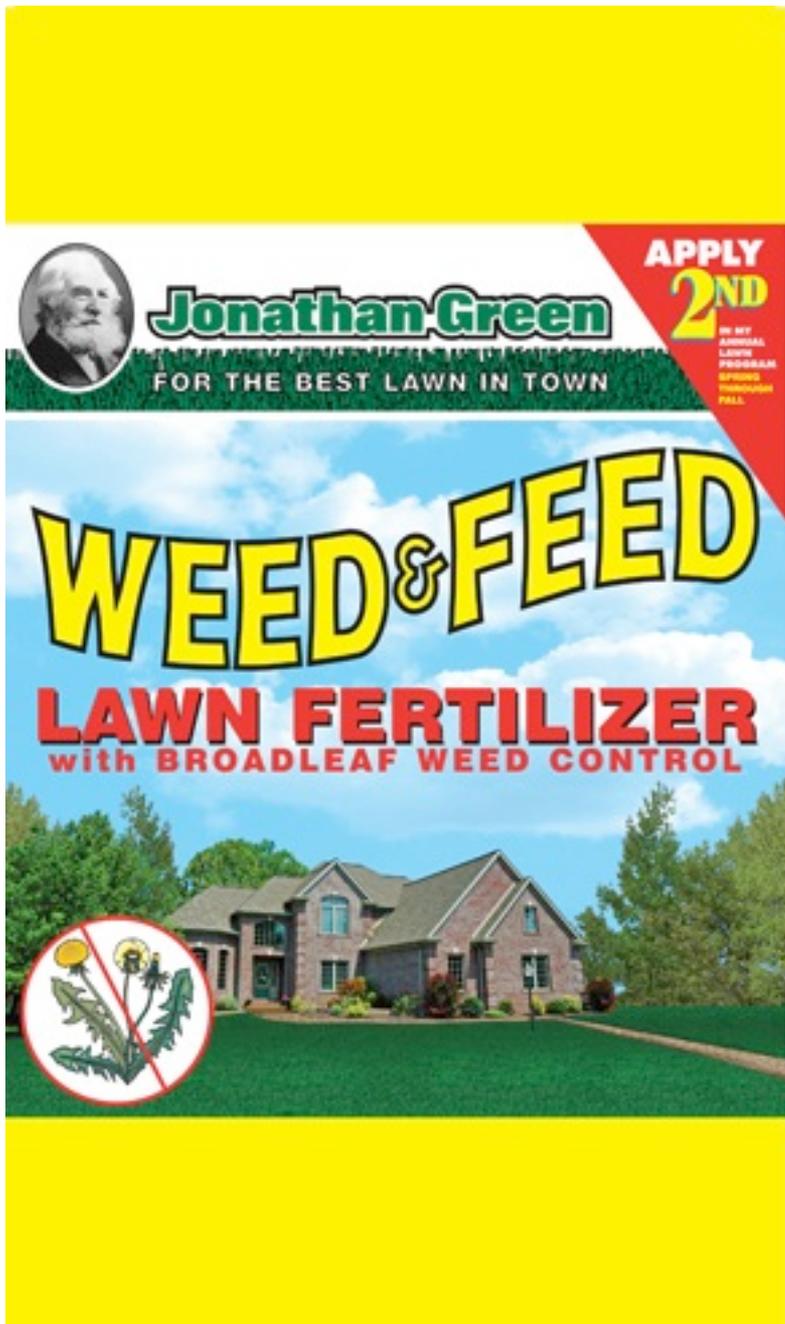
8 cause pregnancy problems (150 million pounds)

(Landrigan, P.J. et al. 1999. Pesticides and inner-city children: Exposures, risks, and prevention. Environmental Health Perspective 107 (Suppl. 3): 431-437.)

Concerns with Pesticide Dependence

- **Pest resistance**
- **Environmental persistence**
- **Bioaccumulation:** when a chemical accumulates in animal fat
- **Biomagnification:** when an organism accumulates residues at higher concentrations than the organisms they consume





There are 200 pesticides registered with the EPA for use on turf/lawns.

In America, 80 million lbs of pesticides are used on lawns alone each year.

90% of all treatments use the same 35 pesticides.

Children: Especially Susceptible

Children are especially susceptible and encounter a higher level of toxicants than adults due to "spatial ecology" (spending time on floors, breathing in dust, ingest more food [fruit, water and pesticides], explore the environment) (Kroger, Schettler, & Weiss, 2005).



Pesticides threaten water quality in rivers and streams....harming salmon and other aquatics

Poisoned Waters



*Pesticide Contamination of
Waters and Solutions
to Protect Pacific Salmon*

–90% of urban streams sampled across the U.S. had pesticide levels that exceeded one or more benchmarks set to protect fish and wildlife. **Urban streams were more likely** than agricultural streams to have pesticide concentrations that exceeded these benchmarks

(Stone, W.W., Gilliom, R.J., and Martin, J.D., 2014, An overview comparing results from two decades of monitoring for pesticides in the Nation's streams and rivers, 1992–2001 and 2002–2011: U.S. Geological Survey Scientific Investigations Report 2014–5154, 23 p., <http://dx.doi.org/10.3133/sir20145154>.)

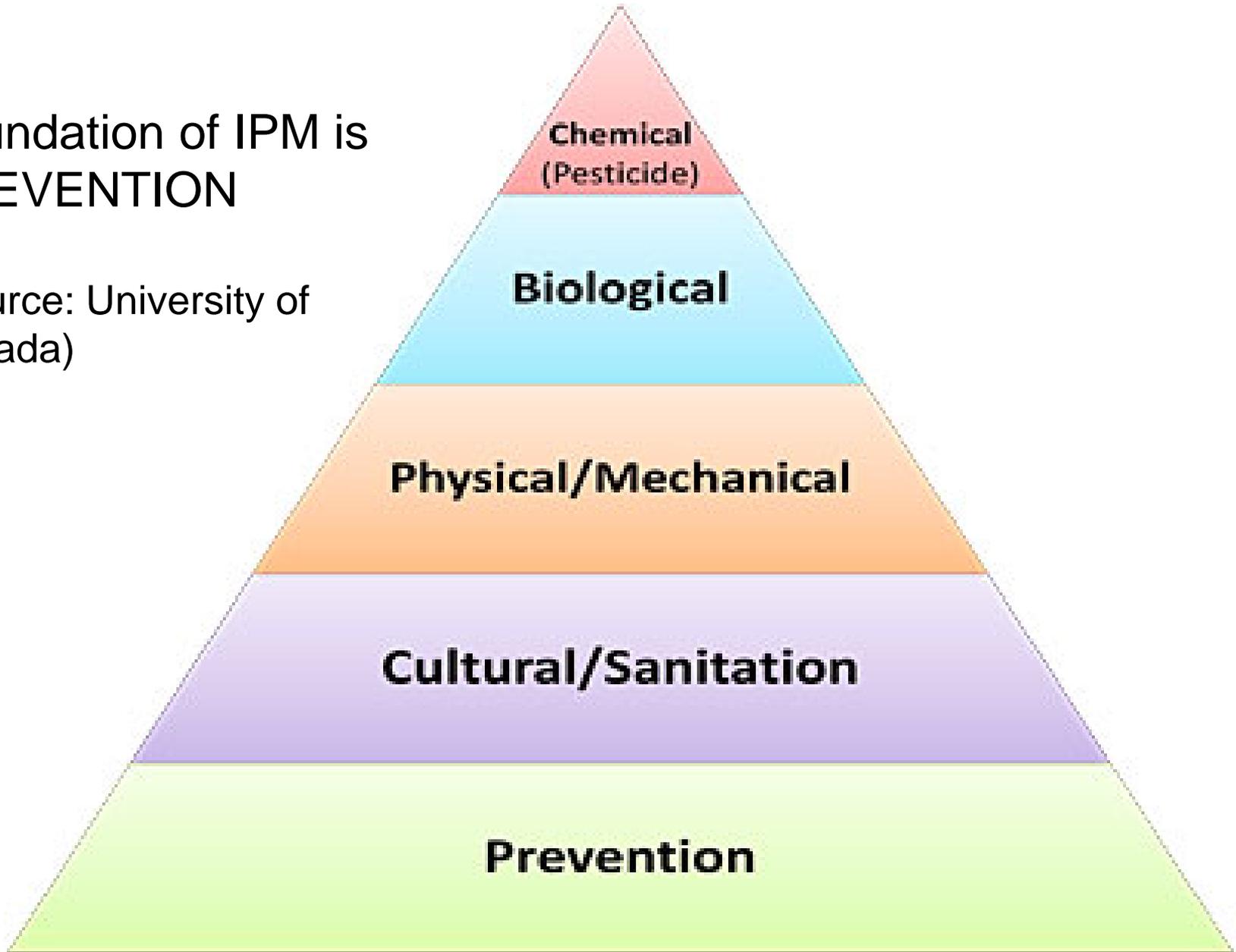


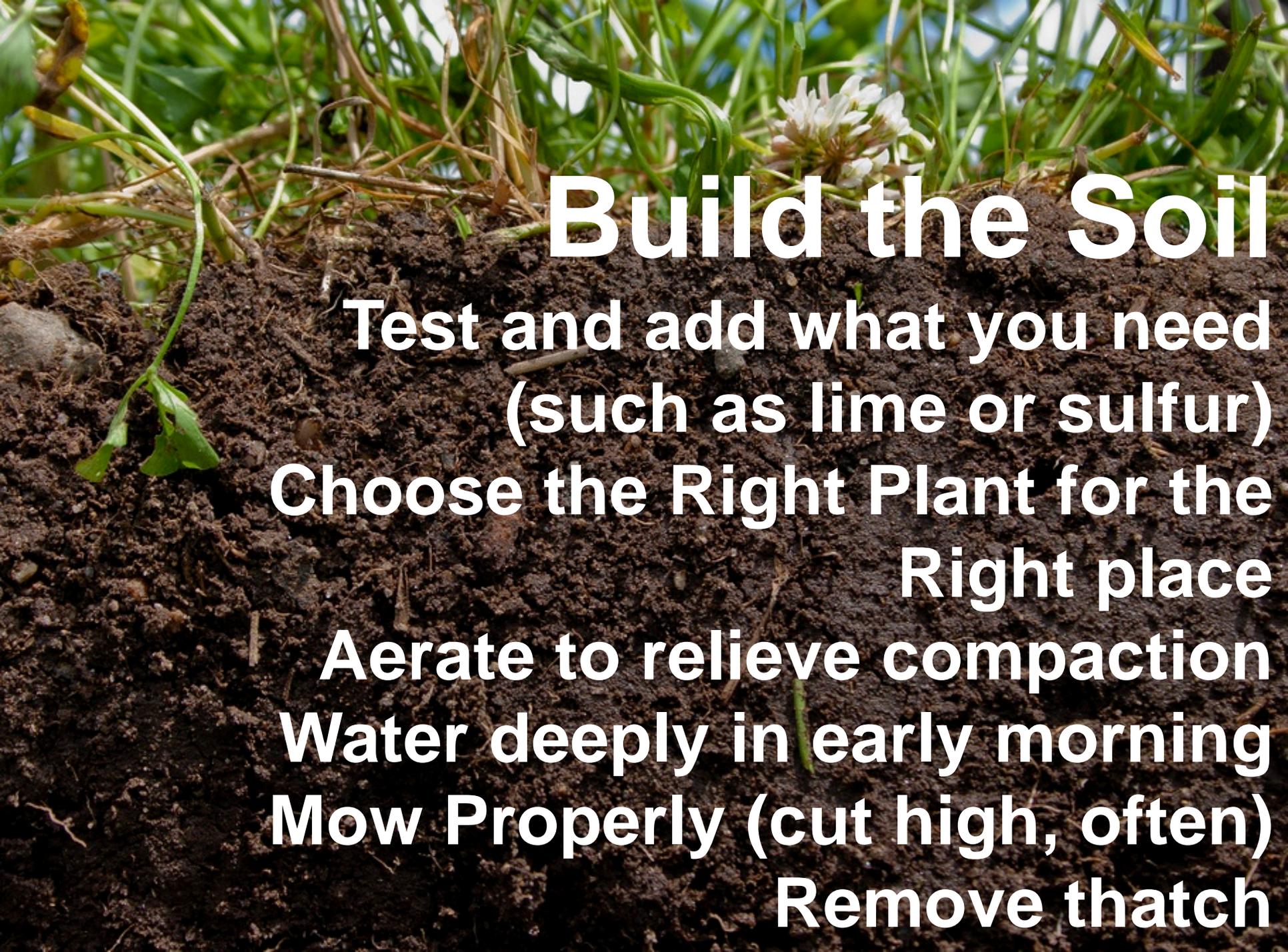
***Alternatives to
pesticides***

IPM as a Framework for Your Campus or Park

Foundation of IPM is
PREVENTION

(Source: University of
Nevada)





Build the Soil

**Test and add what you need
(such as lime or sulfur)**

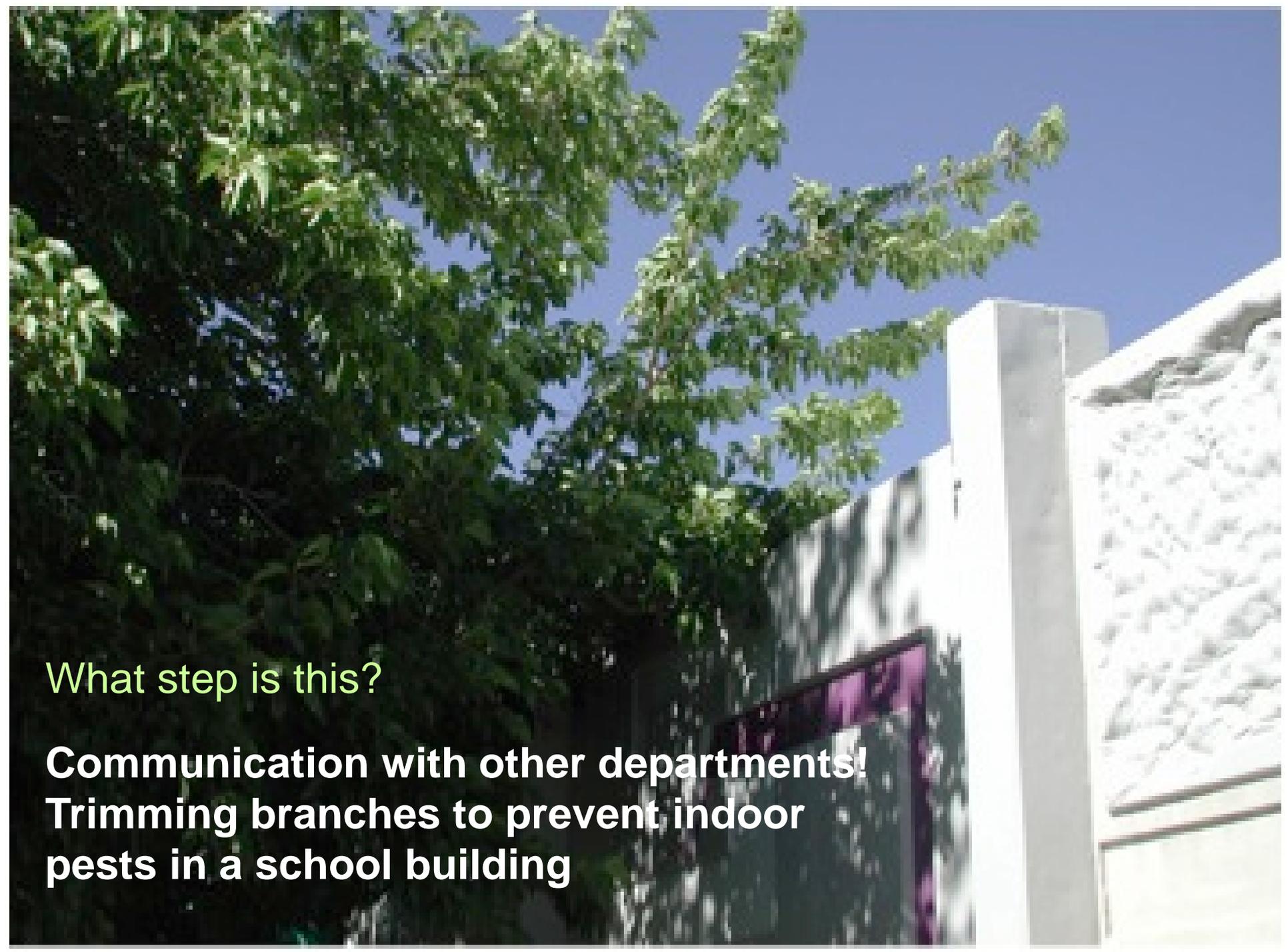
**Choose the Right Plant for the
Right place**

Aerate to relieve compaction

Water deeply in early morning

Mow Properly (cut high, often)

Remove thatch



What step is this?

**Communication with other departments!
Trimming branches to prevent indoor
pests in a school building**

Low maintenance!

What step is this?



IPM and Insects

This insect overwinters in the soil, emerging in midspring. It lays white egg masses on the undersides of leaves. The maggot hatches to tunnel into the leaves for two to three weeks before dropping to the ground to pupate.

Sanitation:

- Remove eggs/maggots
- Use floating row cover fabric to cover your plants
- Use row cover/rotate



Tan blotches on spinach leaves may be a sign of insect damage caused by spinach leaf miner. The immature maggot stage burrows within leaves of spinach, beets and chard, causing blotchy dead patches. Life cycle: 30-40 days.

IPM and Insects -Physical barrier



Flea beetle – shot hole type damage on radish, turnips, broccoli, other brassicas.

Floating row covers or other screening can exclude the beetles during seedling establishment. However, remove row covers before the flowering stage to allow pollinating insects access to the plants

Insects-Physical trap

- Traps
 - codling moths
 - earwigs
 - yellow jackets (timing and bait-protein vs. sweet)



Soapy water

Weeds-Physical

- Cover Crops
 - Smother crop
 - Green manures
 - Biofumigant (mustards)



Biological Controls



Botanicals



PROS:

- Can be effective herbicides/insecticides
- Environmentally benign
- Many are certified for use on organic crops

CONS:

- Can be expensive
- Results are more varied based on conditions
- Strong odor

OMRI reviews products for use in organic crop and horticultural production.

www.omri.org



Bio-control Resources

Nature's Control – Oregon

<http://www.naturescontrol.com/>

March Biological – Oregon

<http://www.marchbiological.com/>

Planet Natural – Montana

<http://www.planetnatural.com>

IPM Overview and insects: Aphids

Prevent: Don't over fertilize

Mechanical: Use reflective mulches or row covers

Biological: Encourage ladybugs and lacewings

Sanitation: Prune aphid infested shoots

Chemical: Spray with soapy water



Trick or Treat?
Three Scary or
sweet Case
Studies!

Examples of IPM and
pesticide alternatives
in action





Landscaping Concerns:

Root bound
Moss

Chemical
'treadmill'

Sloped hillside
unusable space

Consider Alternatives to Chemicals





IPM and time
Management:
Prevent Damage



Rethinking Pesticide Use!



Onward!



Trick or Treat?

Case 2: Eugene Oregon and Springfield Oregon

Educate and advertise your efforts!



City of Eugene-
Pesticide Free Parks:
Rubber Border Strip and
Connected tree wells and
leave the leaves!



Blue fescue grass
planted as a tree ring.
The characteristics of
blue fescue make it a
good substrate for a tree
ring.

Cement Along Fence Lines



Keeping Leaves in Place; Creating Under Tree “Islands”



Perennial Flower Plantings to Control Weeds and Add Beauty



Case 3: Trick or treat?





77 acre upland landscape
58 acre wetland restoration area
135 total campus acres
2 gardeners in wetlands
4 gardeners in the uplands
6 full time campus gardeners









18215
CAMPUS WAY NE

LIBRARY
ANNEX

NO SMOKING

Library/Media Annex



Guess who works in this building?













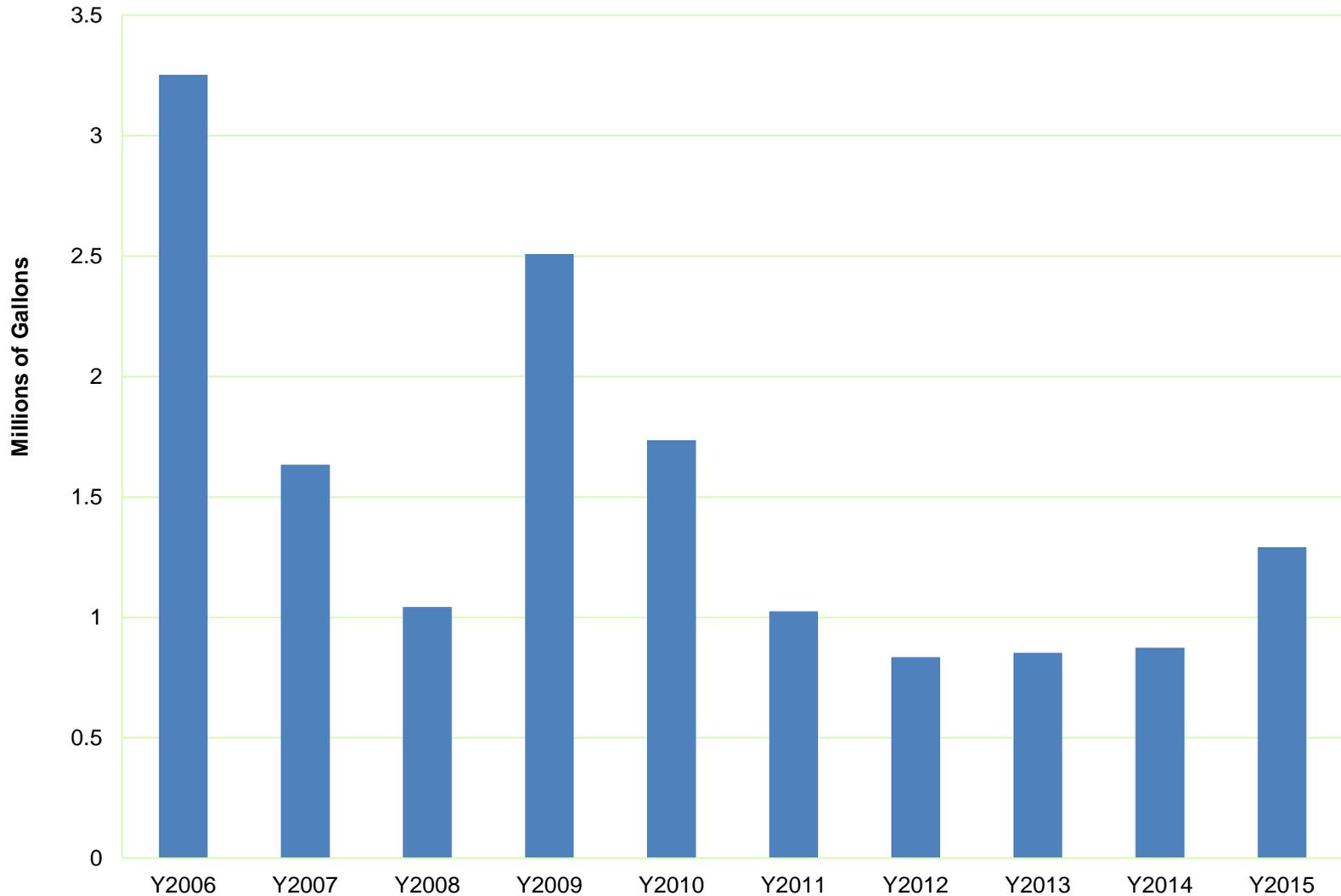


Water Conservation

- Most of the predominantly native or drought tolerant plantings have been weaned off irrigation altogether.
- The majority of the lawn areas no longer receive irrigation.
- Develop beds containing plants with similar water needs.
- Soil building
- Maxicom Central Control System connects the irrigation system to a weather station and adjusts water use daily based on:
 - solar radiation
 - humidity
 - temperature
 - wind run
 - precipitation

Beyond Irrigation

Irrigation System Water Use







Is the Grass Dying ?

In an effort to conserve water, fuel, and labor we are allowing some lawn areas to go through their natural cycle of summer dormancy.

Questions can be directed to Tyson Kemper at Facilities Services
tkemper@uwb.edu



Certified in 2008

SALMON



SAFE

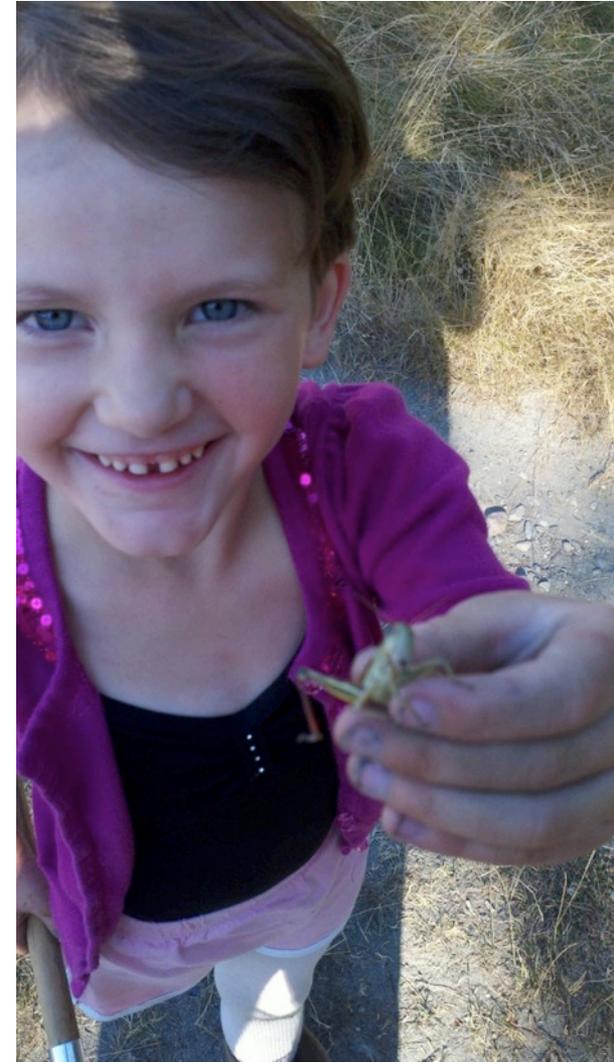
Certified in 2008

Reconsider 'Pest'

The term 'pest' is relative. Every organism plays a role in the ecosystem. Understand that role and its importance.

'Pest' problems typically result from imbalances that are imposed upon natural systems. Rather than simply attacking the 'pest,' work to restore balance to the system.

Establish an acceptable threshold for plant/insect damage and avoid drastic control actions until this threshold is reached.



Certification Programs!

Become a certified landscaping professional
trained in sustainable lawn care:

ecoPro: <http://ecoprocertified.org/>

Salmon Safe (sites)

GreenShield-certification for IPM pest control
companies: www.greenshieldcertified.org/

Help Others/Others Help!

Green Cities Partnership (Green Everett Day)

Master Gardener Program

Forterra Stewardship Programs

Product use and emergencies

National Pesticide Information Center

800-858-7378

www.npic.orst.edu

Poison Control Center National Hotline 800-222-1222

www.aapcc.org

Product Label

Info on Pesticides & Alternatives

NCAP – www.pesticide.org

IPMopedia – www.ipmopedia.org

Safer Pest Control Project – www.spcpweb.org

Contact Information

Megan Dunn, MA

Program Director,

Healthy People and Communities

mdunn@pesticide.org

425-238-4089



NORTHWEST CENTER FOR
ALTERNATIVES TO PESTICIDES