

Homeowner Pesticide Awareness

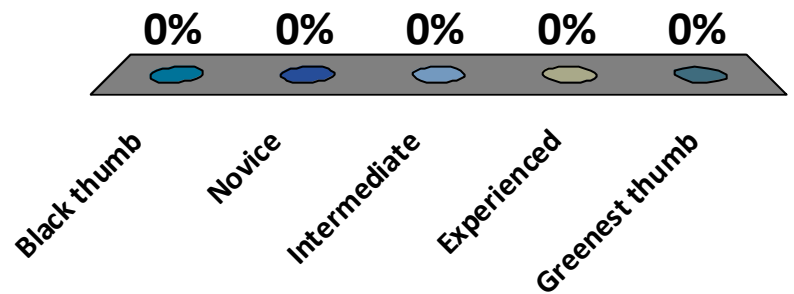


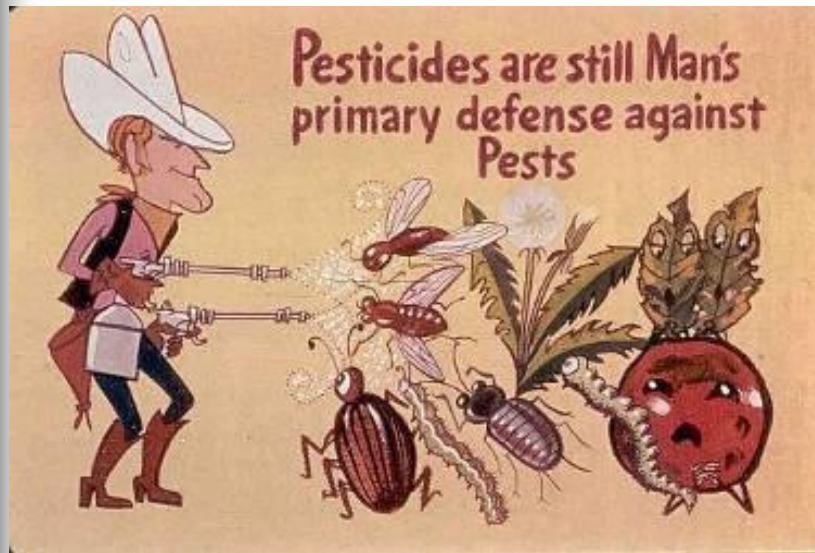
- Gary Fish
Maine Board of Pesticides Control
28 State House Station
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gary.fish@maine.gov



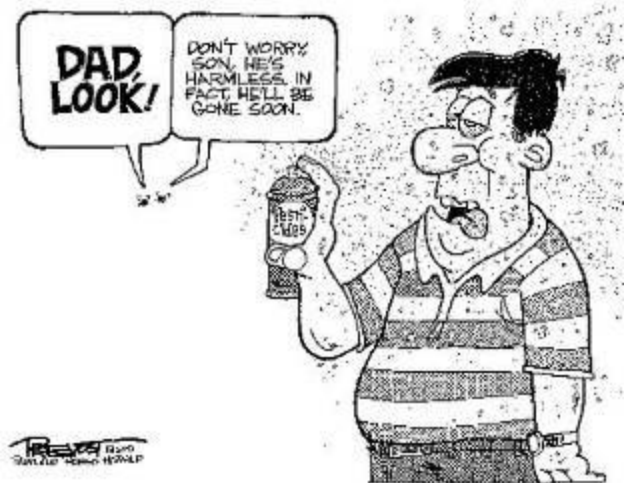
Which type of gardener are you?

1. Black thumb
2. Novice
3. Intermediate
4. Experienced
5. Greenest thumb





How we see ourselves using pesticides



Unfortunately, a not so uncommon result from our use of pesticides

A screenshot of a news article from the website boston.com. The article title is "Bug spray likely killed infant, injured 2 in SC". The author is "By Seanna Adcox" and it is dated "November 2, 2009". The article text begins with "COLUMBIA, S.C.—Bug spray that produces a fog to kill insects is likely to blame for the death of a 10-month-old South Carolina boy, and his 2-year-old brother was critically injured by the fumes, authorities said Monday." The page also shows navigation links like "HOME", "NEWS", "BUSINESS", "SPORTS", "LIFESTYLE", "A&E", "THINGS TO DO" and social media sharing options.

Even in Canada people still rely on pesticides



- Public Health Home
- [A - Z Index](#)

- [Pesticides Home](#)
- [Fact sheets](#)
- [Pesticides FAQ's](#)
- [Health effects](#)
- [Background](#)
- [Indoor use](#)
- [Advertising campaigns](#)
- [Water-wise tips for your lawn](#)
- [Tree care and pest management](#)
- [Stormwater pollution](#)
- [Clean and Beautiful City](#)
- [Live Green](#)
- [Contact Us](#)

Good for your lawn, good for you - go pesticide free



you don't need SUPER powers to have a SUPER lawn

GO PESTICIDE FREE

What's New

You don't have to be a superhero to have a super lawn

All Ontario residents will now be able to enjoy healthy lawns as the province now has a ban on the cosmetic use of pesticides.

Go Natural
Manage lawn and garden pests the natural way.

Health Effects of Pesticides
Pesticides can be dangerous.

Ontario pesticide ban
Summary of new provincial regulations.

FAQs
More information about natural lawn care and pesticides.

Learn more

Dispose of leftover pesticides safely.

Unused pesticides should not be thrown out with regular garbage. Take them to your local [Community Environment Day](#) (runs April 4th to July 4th) or one of the City's [Household Hazardous Waste Depots](#). Make sure to note the hours and days that the depots accept "household hazardous waste," which includes pesticides.

Calendar of natural lawn and garden care

In a pesticide-free lawn or garden, timing is everything. Learn natural tips for every season.

Which are pesticides?

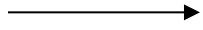
1.

A.



2.

B.



3.

C.

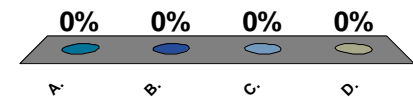


4.

D.



No endorsement intended or implied

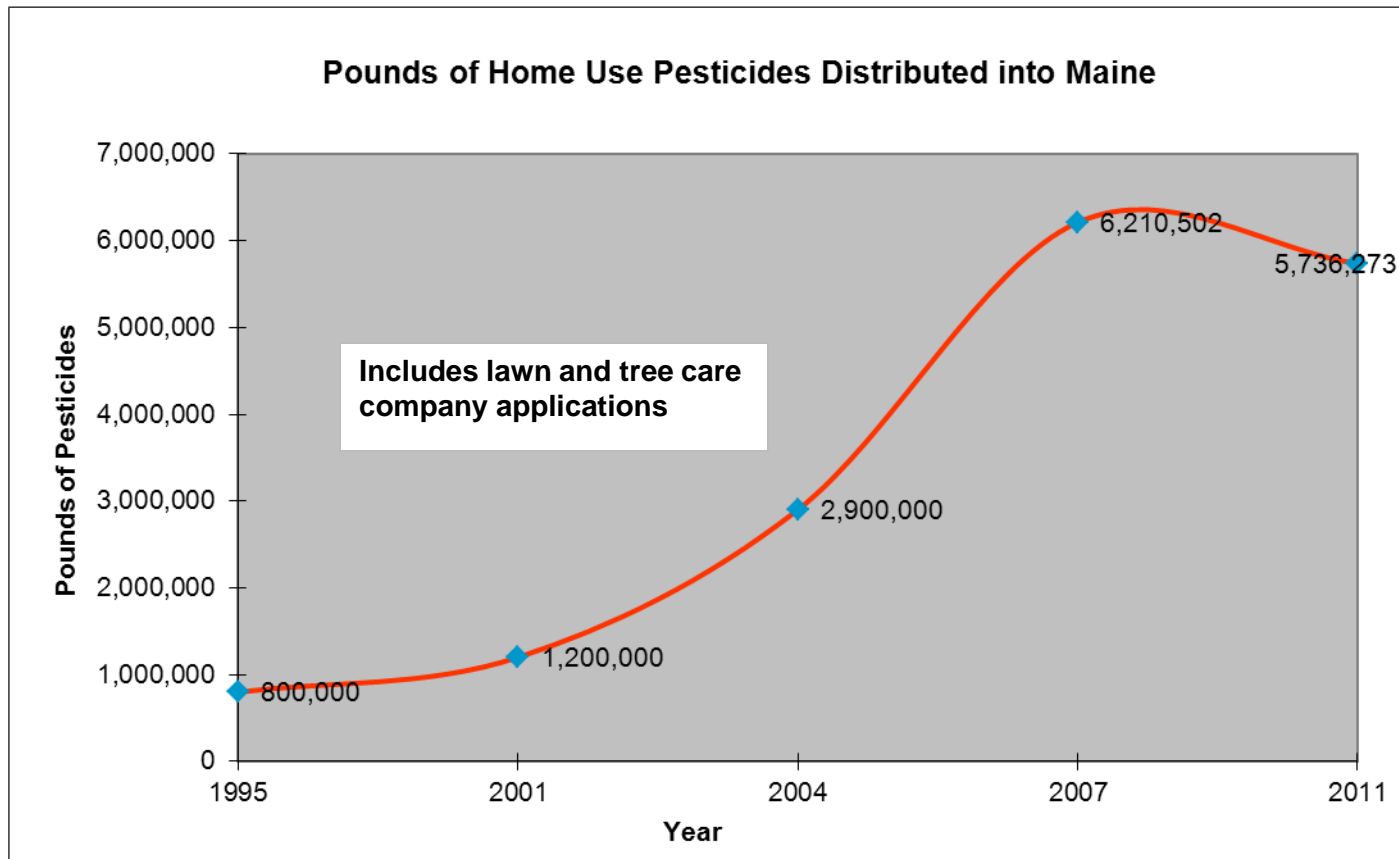


Maine pesticide use more common than perceived



No endorsement intended or implied

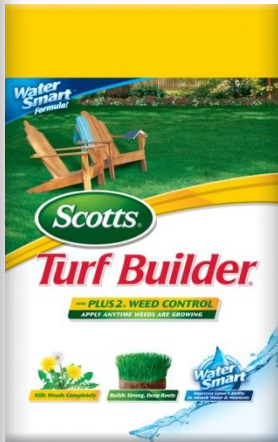
Have we finally hit the top of the curve?



What are pesticides?



- Bleaches, *Lysol*, pine oil



- Weed & Feed, *Roundup*



- Rat & mouse baits



- Plant disease controls

No endorsement intended or implied

What are Pesticides?



- Sevin, Pyrethroids, *Raid*
- “Organics” like pyrethrum
- Biological Controls



- Wood preservatives



These are Pesticides?

- Plant incorporated protectants
 - Have the *Bt.* Crystalline protein engineered into them



No endorsement intended or implied

EPA exempt pesticides



- Some pesticides have been deregulated by EPA

- Exempt from Federal registration
- Must be registered by State of Maine
- Exempt from toxicity testing
- NOT risk free

Ingredients in some of these products:

- Rosemary oil
- Peppermint oil
- Thyme oil
- Clove oil
- Wintergreen oil
- Cinnamon oil

No endorsement intended or implied

What do we know about essential oil pesticide risks?

- Not enough since they are exempt from toxicity tests
- Rosemary oil – not well tested
- Peppermint oil –
 - sensitization,
 - irritant,
 - lung damage,
 - not recommended for children, infants or during pregnancy or breast feeding
- Clove oil –
 - allergic reactions,
 - not good for people with liver or kidney disorders,
 - increases bleeding risks,
 - interacts with drugs,
 - contains eugenol which when methylated becomes a potent carcinogen



Introducing **EcoSMART[®] ORGANIC[™]** Garden Insect Killer.

Now there is an organic insecticide that is **safe to use around children and pets and won't harm the environment.** **EcoSMART[®] ORGANIC[™]** Garden Insect Killer is made from a patented blend of organic plant oils. It kills bugs fast, without any synthetic toxins or harmful residue. It's safe. It's effective. It's smart. Naturally.

To learn more about **EcoSMART[®]** and its entire portfolio of organic pesticide products, please visit our web site at www.ecosmart.com.

Register to win free EcoSMART product at ecosmart.com/garden

FRESH NATURAL SCENT SIGNALS IT'S WORKING.

KILLS AND REPELS: Many common garden pests including Aphids, Mites, Thrips, Whiteflies, Beetles and Caterpillars.

WHERE TO USE: Use on Fruits, Vegetables, Flowers, Ornamentals, Trees & Shrubs.

SHAKE WELL BEFORE USING. READ ENTIRE LABEL AND USE ACCORDINGLY.

Active Ingredients:

Rosemary Oil	0.25%
Peppermint Oil	0.25%
Thyme Oil	0.25%
Clove Oil	0.25%
Other Ingredients*	99.00%
Total	100.00%

*Water, Mineral Oil (USP), 9-Octadecenoic acid (9Z)-, potassium salt, Lecithin

Questions or Comments? Call **1-877-723-3545**



EcoSMART
Technologies

Manufactured for:
EcoSMART TECHNOLOGIES, INC.
3600 Mansell Road, Suite 150
Alpharetta, GA 30022

MADE IN USA.

US Patent Nos. 6,004,569 6,114,384 6,376,556 6,342,536 and 6,531,163. US and Foreign Patent Pending. Item No. 33117. EcoSMART, EcoSMART ORGANIC, and the EcoSMART TECHNOLOGIES logo are trademarks of EcoSMART TECHNOLOGIES, INC. ©2009 EcoSMART. All Rights Reserved.



No endorsement intended or implied

What are the risks?

- Wintergreen oil –
 - highly toxic,
 - not recommended during pregnancy,
 - causes dermatitis,
 - inhalation hazard
- Cinnamon oil –
 - powerful irritant and
 - even worse sensitizer



Introducing EcoSMART FLYING INSECT KILLER

Now there is a new, organic, fast-killing insecticide that is **safe to use around children and pets**. Unlike other insecticides, it is made from organic plant oils and kills bugs naturally to better protect your family. Plus, there's no pesticide residue. It's safe. It's effective. It's smart. Naturally.

To learn more about the EcoSMART story, as well as our products and technology, please visit us at www.ecosmart.com.

FRESH NATURAL SCENT SIGNALS IT'S WORKING.

DIRECTIONS FOR USE:

SHAKE WELL BEFORE USING. READ ENTIRE LABEL AND USE ACCORDINGLY.

FLYING INSECT TREATMENT: Kills flies, gnats, mosquitoes, moths, wasps and other flying insect pests on contact. Hold container upright and aim nozzle away from person. Press button firmly to spray. Direct spray at flying insects, contacting as many insects as possible. Spray in short 2-3 second bursts.

NOTE: When used indoors, wipe away excess product.

PRECAUTIONARY STATEMENTS: We recommend good safety practices when using any insecticide, such as avoiding contact with eyes and skin. If product gets in eyes, flush with water for at least 15 minutes. If on skin, wash with soap and water. If irritation persists, contact a physician.

PHYSICAL HAZARDS: Contents under pressure. Keep away from heat, sparks and open flames. Do not puncture or incinerate container. Exposure to temperatures above 130° Fahrenheit may cause container to burst.

STORAGE & DISPOSAL: CAUTION: Keep out of reach of children. Store in a cool, dry area away from heat or open flame. When container is empty, recycle if available. Do not puncture or incinerate.

LIMITATION OF LIABILITY: EcoSMART makes no warranties of merchantability or of fitness for a particular purpose, nor any other express or implied warranty except as stated above. Buyer assumes all responsibility for safety and use not in accordance with label, directions and precautionary statements.

EcoSMART represents that this product is a Minimum-Risk pest control product, and qualifies for exemption from EPA registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Active Ingredients: Organic Plant Oils

Peppermint Oil	2.00%
Cinnamon Oil	1.00%
Sesame Oil	1.00%
Other Ingredients*	96.00%
Total	100.00%

*Water, Wintergreen Oil, Isopropanol, Canola Oil, Lecithin, Carbon Dioxide

Questions or Comments? Call 1-877-723-3545
24 hours a day, 7 days a week



Manufactured for
EcoSMART TECHNOLOGIES, INC.
3600 Mansell Road, Suite 150
Alpharetta, GA 30022

MADE IN USA
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EcoSMART®



What does registration mean?

- Not a safety guarantee
- Reasonable certainty of no harm, but **NOT** risk free
- Must read and follow the label to manage the risk



What about home remedies

- Home chemistry is not recommended by the BPC
- Many of the materials used seem “safe” because we eat them or use them on our skin
- Exposure routes may be different
- What we eat may not be safe to breathe



Burnout II Concentrate

Active Ingredients: Clove Oil 12%

Sodium Laurel Sulfate ... 8%

Other Ingredients:

Vinegar, Lecithin, Water, Citric Acid, Mineral Oil

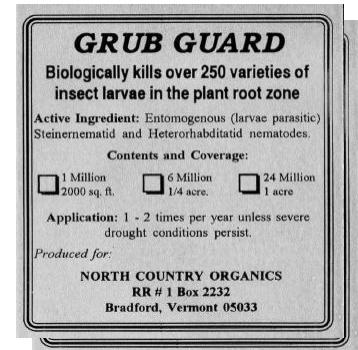
Total Other 80%

Section V - Health Hazard Data

Route(s) of Entry:	Inhalation? Yes	Skin? YES	Ingestion? YES
Health Hazards: Contains acetic acid and is flammable and extremely corrosive. Contact with this product will result in severe eye irritation and possible permanent damage. Contact with this product will cause severe skin irritation and/or chemical burns. Breathing vapors will cause significant respiratory irritation, and pulmonary edema if prolonged. Ingestion of this product could cause burns and destroy tissue in the mouth, throat, and digestive tract.			

What products are NOT pesticides?

- Insect parasitic nematodes



- Rodent or insect traps



- Beneficial insects or mites



No endorsement intended or implied

What are the benefits?



- Aesthetics

- Healthy saleable plants & produce



What are the benefits?



- Bountiful harvest



BROWNTAIL MOTH



DEER TICK

- Nuisance or public health pest control



OH FOR CRYING OUT LOUD ETHEL, STOP SCREAMING, JUST HOW BIG CAN ONE GYPSY MOTH BE?

All pesticides have risks!!!

■ Organic ≠ Safe

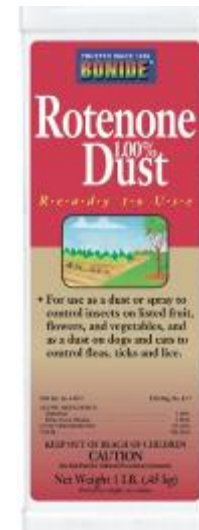


Introducing...
**ALL-NATURAL ORGANIC
Earth Friendly™**
Preemergence weed control
and fertilizer
for lawns and gardens

■ Synthetic ≠ Highly toxic



■ Natural ≠ Safe



No endorsement intended or implied

Even natural or organic products are toxic!

How Many Fold Lower is Human Exposure Than the Dose That Gave Rodents Cancer Margin of Exposure, MOE (Rodent Cancer Dose/Human Exposure)

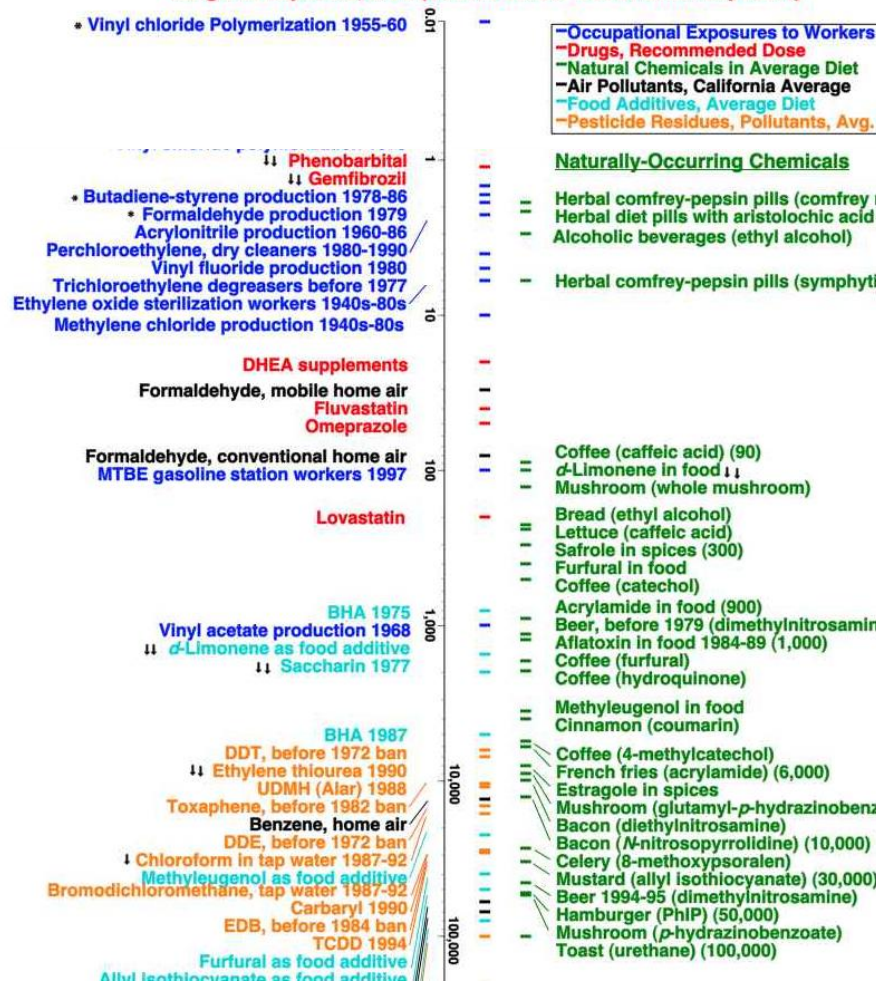


TABLE 2-12 Original chart from Pests of the Garden and Small Farm by Mary Louise Flint Amended by Gary Fish September 2007

Oral LD₅₀ Values for Some Pesticides Used in Small Farms and Gardens.

CHEMICAL	COMMON TRADE NAMES	ORAL LD ₅₀ ^a	EIC ^b	TYPE OF PESTICIDE
Nicotine	Black Leaf 40	55	45 ¹	insecticide
Rotenone*		132	33	insecticide
Bordeaux*		300	68	fungicide
Diazinon		300	43	insecticide
2,4-D		375	17	herbicide
Carbaryl	Sevin	500	21	insecticide
Acephate	Orthene	866	23	insecticide
Copper hydroxide*	Kocide	1000	33	fungicide
Copper oxychloride sulfate*	C-O-C-S	1000	33 ¹	fungicide
Ryania*		1200	55	insecticide
Malathion		1375	24	insecticide
Pyrethrum*		1500	18	insecticide
Propargite	Omite	2200	43	acaricide
Sabadilla*		4000	36	insecticide
Glyphosate	Round-up	4300	15	herbicide
Cryolite*	Kryocide	10,000	21	insecticide
Benomyl	Benlate	>10,000	53	fungicide
<i>Bacillus thuringiensis</i> *	Dipel	15,000	8	insecticide

NOTE: Some materials on this list may not be currently registered as pesticides or their use may be restricted.

*asterisk indicates chemical was acceptable for organically grown produce.

^aLD₅₀ indicates the amount of pesticide that will kill half of a group of test animals. These values are for milligrams of pesticide per kilogram of body weight. These figures do not provide an indication of the chronic health risk or persistence in the environment.

^bEIC or Environmental Impact Quotient is a method to calculate the environmental impact of most common fruit and vegetable pesticides (insecticides, acaricides, fungicides and herbicides) used in commercial agriculture. The values obtained from these calculations can be used to compare different pesticides and pest management programs to ultimately determine which program or pesticide is likely to have the lower environmental impact.

¹Estimated EIO.

“All substances are poisons; there is none which is not a poison. The right DOSE differentiates a poison from a remedy.”

—Paracelsus (1493-1541)

Even too much water can kill – over 1.5 liters/hour



Woman dies after water-drinking contest
Water intoxication eyed in 'Hold Your Wee for a Wii' contest death

AP Associated Press

Updated: 10:24 p.m. ET Jan 13, 2007

SACRAMENTO, Calif. - A woman who competed in a radio station's contest to see how much water she could drink without going to the bathroom died of water intoxication, the coroner's office said Saturday.

Jennifer Strange, 28, was found dead Friday in her suburban Rancho Cordova home hours after taking part in the "Hold Your Wee for a Wii" contest in which KDND 107.9 promised a Nintendo Wii video game system for the winner.

"She said to one of our supervisors that she was on her way home and her head was hurting her real bad," said Laura Rios, one of Strange's co-workers at Radiological Associates of Sacramento. "She was crying and that was the last that anyone had heard from her."

NBC VIDEO



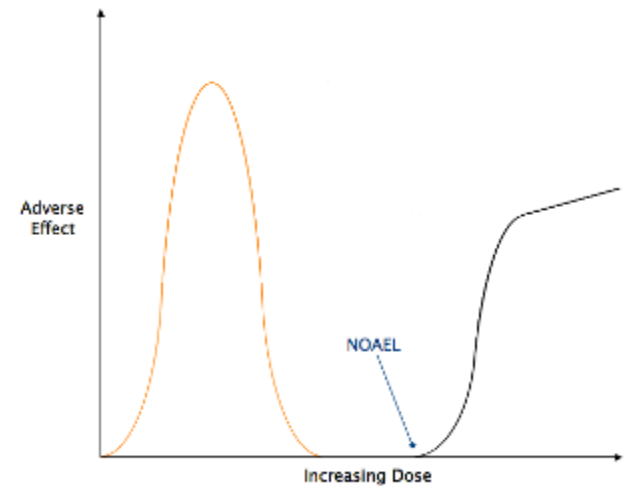
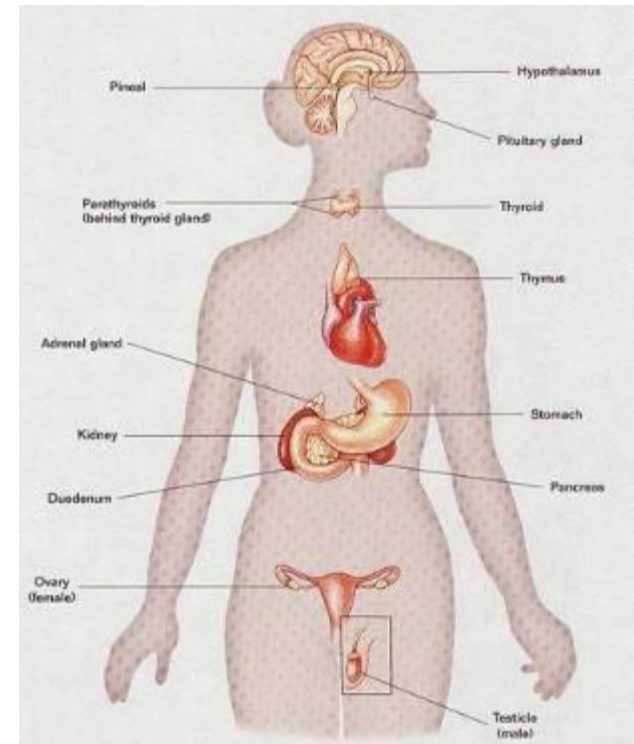
Launch

Woman in water drinking contest dies
Jan. 15: Sacramento Bee reporter Christina Jewett talks to MSNBC-TV's Contessa Brewer about the death of a woman who had competed in a radio station contest.

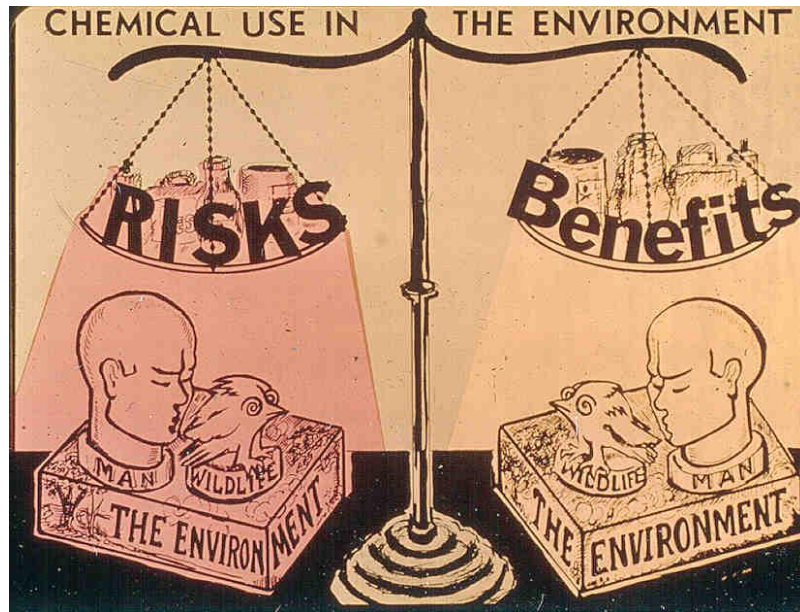
MSNBC

Endocrine effects

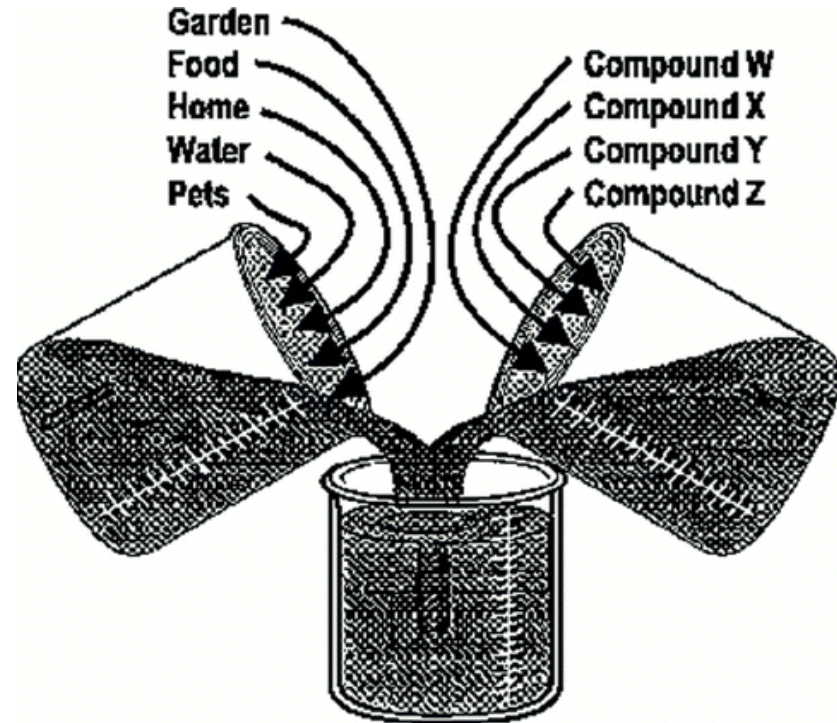
- EPA is just beginning to do endocrine disrupter screening for pesticide active and inert ingredients
- <http://www.epa.gov/scipoly/oscpendo/index.htm>
- http://www.epa.gov/scipoly/oscpendo/pubs/final_list_frn_041509.pdf
- Does the dose make the poison?? What about hormesis?
- <http://www.belleonline.com/index.htm>



Risk assessment



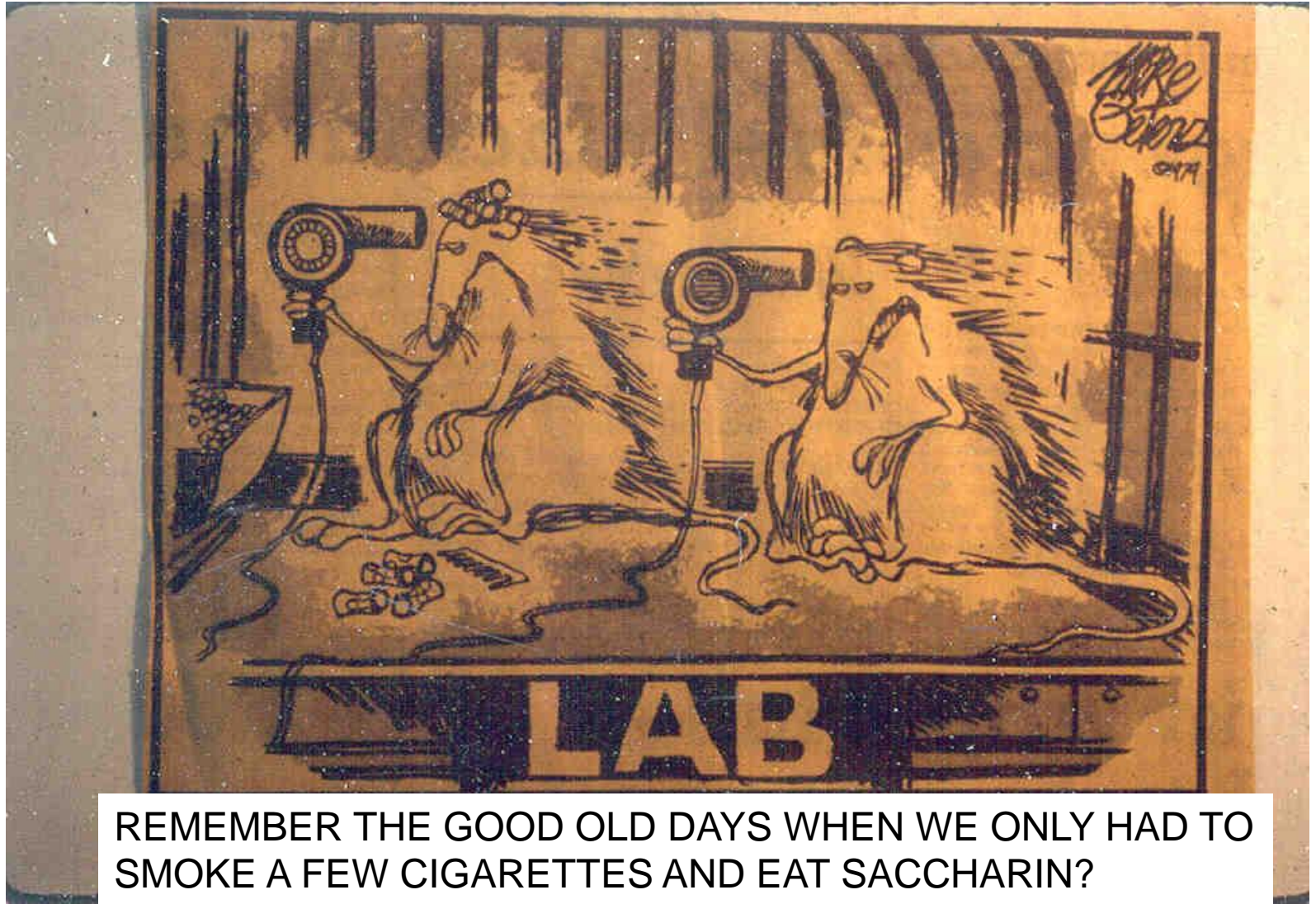
Prior to 1996 FQPA



Aggregate and Cumulative Risk Cup

After 1996 FQPA

How are the risks determined?



REMEMBER THE GOOD OLD DAYS WHEN WE ONLY HAD TO SMOKE A FEW CIGARETTES AND EAT SACCHARIN?

What are the human risks?

■ Acute

- Rash
- Nausea
- Eye ticks
- Stomach cramps



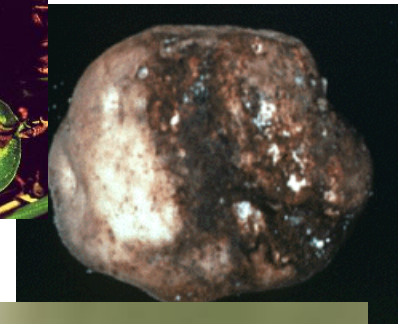
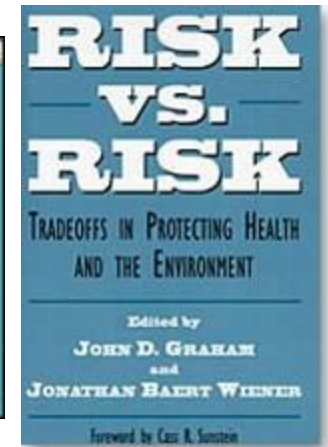
■ Chronic

- Cancer
- Birth defects
- Allergies
- Organ damage
- Endocrine effects



Risk vs. Risk

- West Nile Virus & EEE
Malaria
- Potato Late Blight Disease
- Lyme Disease



Courtesy of
Kevin Byron

RESTRICTED USE PESTICIDE

ACUTE TOXICITY and GROUND WATER CONTAMINATION

For retail sale and use only by Certified Applicators or persons under the direct supervision of a Certified Applicator and only for those sites covered by the Certified Applicator's certificate.



TEMIK® brand 15G ALDICARB PESTICIDE

For Control of Certain Insects, Mites, and Nematodes.

ACTIVE INGREDIENT: Aldicarb (methyl 2-methyl-2-sulfonylcarbamate) 10%
INERT INGREDIENTS 85%

EPA Reg. No. 266-333

EPA Est. No. 254-GA-01

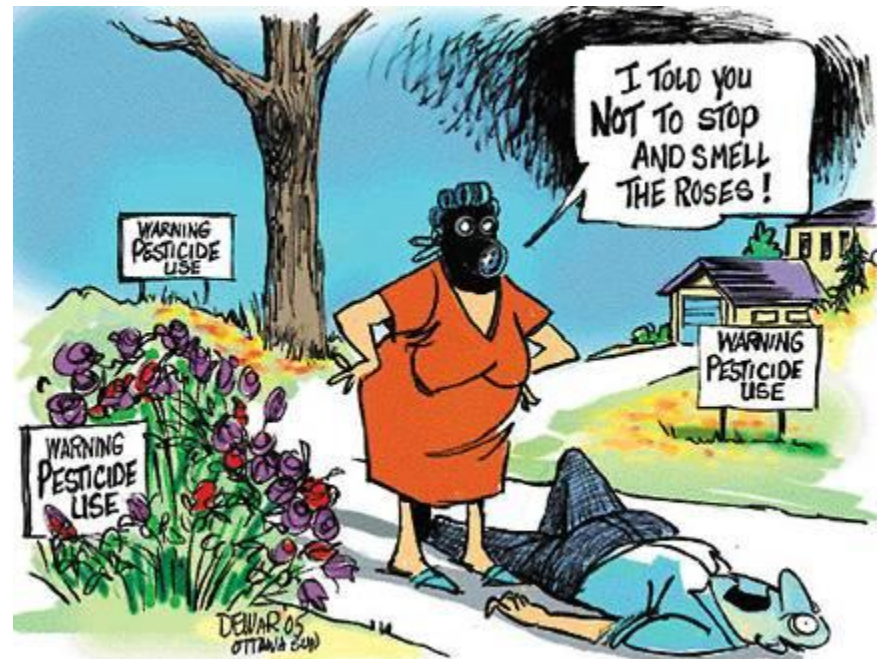


KEEP OUT OF REACH OF CHILDREN
ANGER POISON
PELIGRO



=

X



No endorsement intended or implied

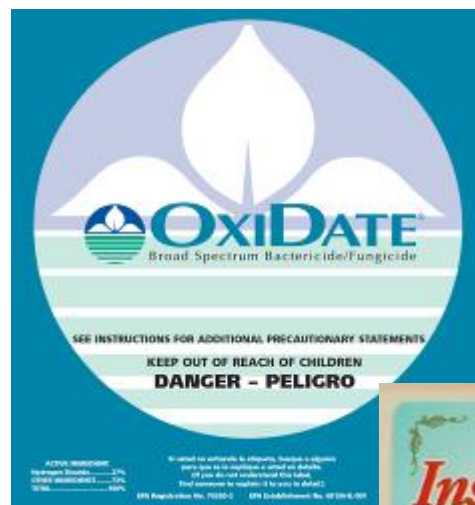
One way to quickly assess the risk?

Signal Words

Danger

Warning

Caution



ACTIVE INGREDIENT:
Bacillus thuringiensis, subsp. kurstaki, strain ABTS-381, fermentation solids, spores, and insecticidal toxins 54%
OTHER INGREDIENTS 46%
TOTAL 100%
Potency: 32,050 Cabbage Looper Units (CLU) per mg (14.5 billion CLU per pound).
The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.
EPA Reg. No. 73348-39
EPA Est. No. 33792-14-001
List No. 12046



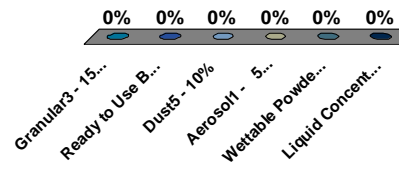
KEEP OUT OF REACH OF CHILDREN

CAUTION

No endorsement intended or implied

Please choose the two pesticide formulation types with the lowest exposure potential

	Formulation Type	Percent Active Ingredient
1.	Granular	3 - 15%
2.	Ready to Use Baits, Gels or Liquids	1 - 15%
3.	Dust	5 - 10%
4.	Aerosol	1 - 5%
5.	Wettable Powder	50 - 85%
6.	Liquid Concentrate	40 - 90%



Reduce exposure by using targeted materials

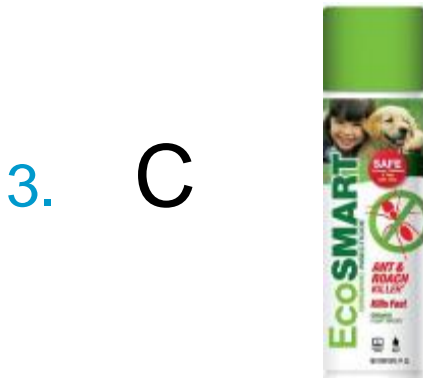
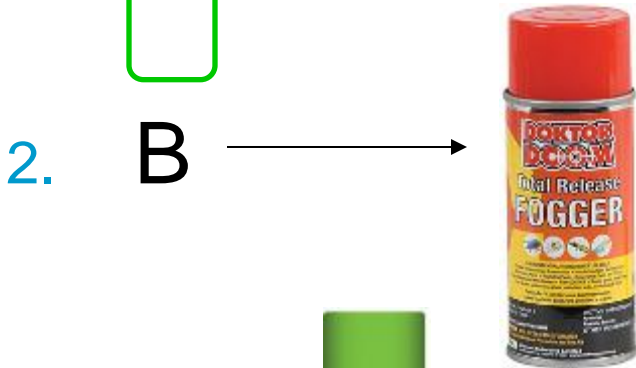
- Enclosed baits & gels
- Spot treatments
- Broadcast treatments

Best

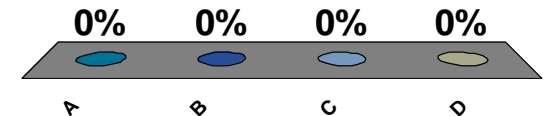


Worst

Which product do you think is the better choice?



No endorsement intended or implied



How is risk reduced?- PPE

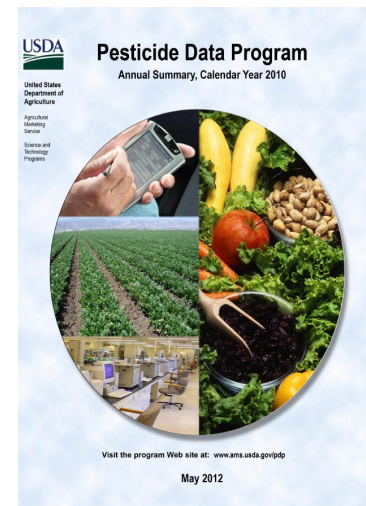


What are some “environmental” risks?

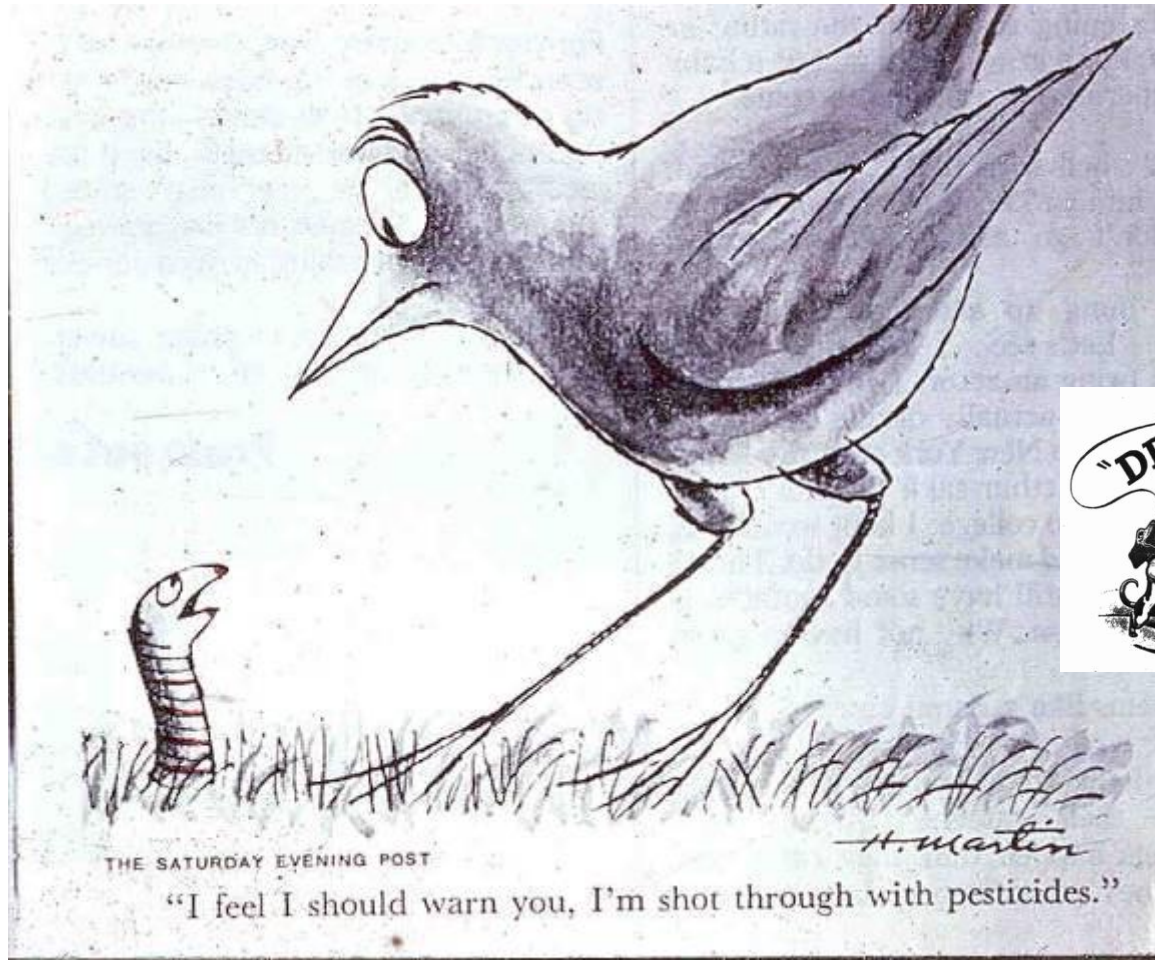
- Wildlife effects



- Residues on food



Remember “Silent Spring”



*Biomagnification of chlorinated hydrocarbons like DDT or Dieldrin was a problem in the 60's & 70's

Today's wildlife concerns

- Biomagnification is not a big issue any more
 - the old persistent products were cancelled
- Pollinators are now a focus area



The screenshot shows the University of Maine Cooperative Extension website. At the top left is the logo for the University of Maine Cooperative Extension, established in 1865. To the right of the logo, it says "Local Extension offices near you" and "Learn more about this institution", with a link to "Select a different institution". Below the logo is a navigation menu with links for Home, About, Resource Areas, News, Articles, Answers, Calendar, and Learning Lessons. The main content area is titled "Bee Health Home" and features the article "Managed Pollinator CAP: Coordinated Agricultural Project", last updated on October 03, 2012. There are buttons for "Print" and "Share / Save". A yellow box on the right asks "Have a question? Try asking one of our Experts". Below the article title is a graphic with the text "Managed Pollinator CAP Coordinated Agricultural Project" and "A National Research and Extension Initiative to Reverse Pollinator Decline", accompanied by an illustration of a bee and a honeycomb. The URL "www.beeccdcap.uga.edu" is at the bottom.

Multiple Universities' Pollinator Project

- The answers are only beginning to emerge, but current research has revealed some results
 - Mites and viruses appear to be the main culprits along with the mite controls
 - For honey bees low levels of pesticides have been shown to reduce associative learning of individual bees in laboratory studies
 - These changes in learning and behavior can potentially alter normal colony level functions, yet colony-level impacts remain to be verified
 - Neonicotinoids like this one can be expressed in ornamental plant pollen and nectar at levels much higher than in agricultural uses



No endorsement intended or implied

Toxicity of Common Organic-Approved Pesticides to Pollinators

Toxicity of Common Organic-Approved Pesticides to Pollinators

PESTICIDE	NON-TOXIC	LOW TOXICITY	HIGHLY TOXIC
Insecticides/Repellants/Pest Barriers			
<i>Bacillus thuringiensis</i> (Bt)	■		
<i>Beauveria bassiana</i>			■
<i>Cydia pomonella granulosis</i>	■		
Diatomaceous Earth			■
Garlic	■		
Insecticidal Soap			■
Kaolin Clay	■		
Neem		■	
Horticultural Oil			■
Pyrethrins			■
Rotenone			■
Sabadilla			■
Spinosad			■
Herbicides/Plant Growth Regulators/Adjuvants			
Adjuvants		■	
Corn Gluten	■		
Gibberellic Acid	■		
Horticultural Vinegar		■	
Fungicides			
Copper		■	
Copper Sulfate			■
Lime Sulfur	■		
Sulfur			■

Soaps and Oils,
only when directly
sprayed upon the
pollinator

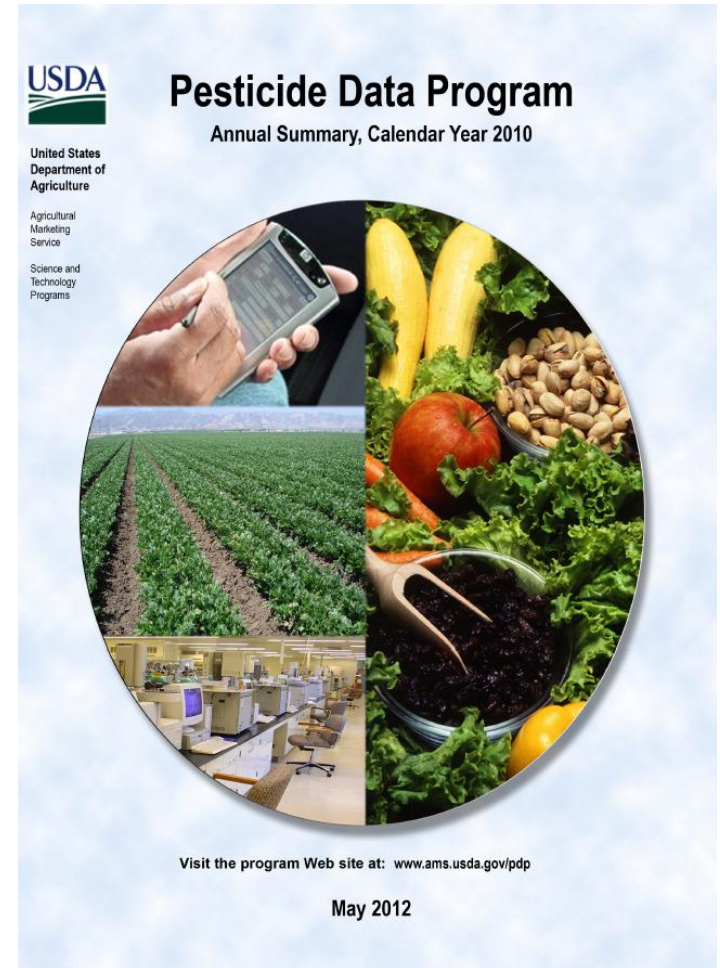


Pesticide residues are found on all types of food

- Samples are randomly chosen near the point of consumption, and
- reflect what is typically available to the consumer throughout the year
- Samples are selected without regard to country of origin, variety, or organic labeling

2010 USDA-PDP Sampling

- USDA – PDP 2010 sampling shows that 99.75% of all samples are well below the tolerances set by EPA
- In baby food no residues were found above the tolerance levels
- A few samples contained extremely low levels of pesticides for which there is no tolerance which are not a food safety risk



PDP also detects pesticide residues on organic produce

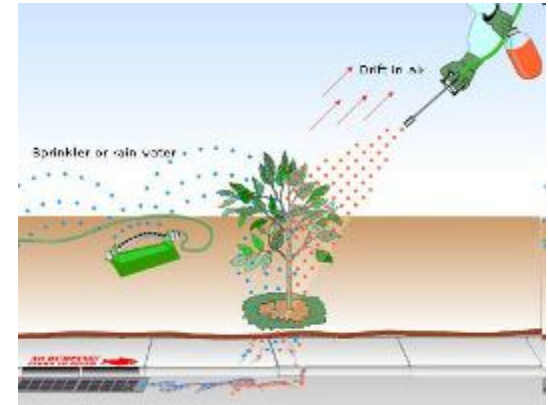
- According to the 2008 USDA Pesticide Data Program Report:
 - 43% of organic spinach samples were positive for spinosad (13 of 30 samples positive)
- According to the 2010 USDA Pesticide Data Program Report:
 - 52% of organic baby food pear samples were positive for spinosad (16 of 31 samples)
- Spinosad is NOP approved and is derived from a naturally occurring soil bacteria



No endorsement intended or implied

Other pesticide risks

- Drift
- Water contamination
- Storage
- Disposal



Drift

- Check for sensitive areas first!
- Watch the wind speed
- Keep the spray low
- Spray with the breeze
- Don't apply when over 85°F



Pesticides Can Leach Into Groundwater



Home pesticide use - Worst case

Groundwater monitoring results

Commodity Group	Number of Samples Collected			Number of Samples with Positive Detections			Percent of Samples with Positive Detections			Detections Above a Health Advisory		
	1994	1999	2005	1994	1999	2005	1994	1999	2005	1994	1999	2005
Potatoes	47	100	87	8	4	1	17%	4%	1%	None	None	None
Corn	49	51	28	7	0	4	14%	0%	14%	None	None	None
Blueberries	21	22	13	15	13	7	75%	59%	54%	None	None	None
Small Grains	3	9	17	0	0	1	0%	0%	6%	None	None	None
Orchards	1	5	3	1	0	0	100%	0%	0%	* One	None	None
Christmas Trees	5	4	3	0	0	0	0%	0%	0%	None	None	None
Strawberries	None	3	6	---	0	0	---	0%	0%	---	None	None
Totals:	129	194	157	31	17	13	23.3%	9.0%	8.3%	---	---	---

*Homeowner application of diazinon to control ants – 10x over MCL



Groundwater monitoring results

- We sampled wells near blueberry fields in 2011
 - the number of wells with detections dropped to 38%
 - 2 different herbicides found
 - hexazinone
 - terbacil

Pesticides Can Run-off Into Surface Waters



BayScaping Project

- Friends Of Casco Bay did some detective work in 2001, 2002, 2003, 2005, 2006, 2008 and 2009
- Sampled runoff water from intensive lawn care areas in Cumberland, S Portland, Westbrook, Falmouth, Yarmouth, Brunswick, Freeport, Portland and Cape Elizabeth & Back Cove area



Friends of Casco Bay Sampling

– Pesticide residues detected in surface water

- Diazinon up to (2.6 ppb)**
- 2,4-D up to (36.4 ppb)
- Dicamba up to (4.1 ppb)
- MCPP up to (26 ppb)
- MCPA up to (0.45 ppb)
- Clopyralid up to (0.91 ppb)
- Propiconazole up to (0.075 ppb)
- Chlorothalonil up to (0.22 ppb)
- Found Excess Nitrogen & Phosphorous in most samples



**Values in red exceed
Aquatic Life Criteria

– Pesticide residues detected in sediments

- Bifenthrin up to (37 ppb)
- Permethrin up to (47 ppb)

USGS National Water Quality Assessment



- Sampled urban streams
 - Insecticides occurred more frequently in urban streams than they did in agricultural area streams
 - Herbicides detected in 99% of Urban stream samples
 - Phosphorous found at same levels as in agricultural streams
 - 70% of those samples exceeded the EPA desired goal for reducing nuisance plant growth (algae)

Prevent water contamination



- Locate & stay away from wells
- Stay away from ledge
- Stay away from wetlands & water
- Do not apply to slopes near water
- Do not apply before heavy rains
- Spot applications
- Vegetative buffers



Think First... Spray Last



- “The quick fix is neither”!

Make the benefits

Outweigh the risks

1997 Legislative Mandate

- It is the policy of the State to Minimize reliance on pesticides!

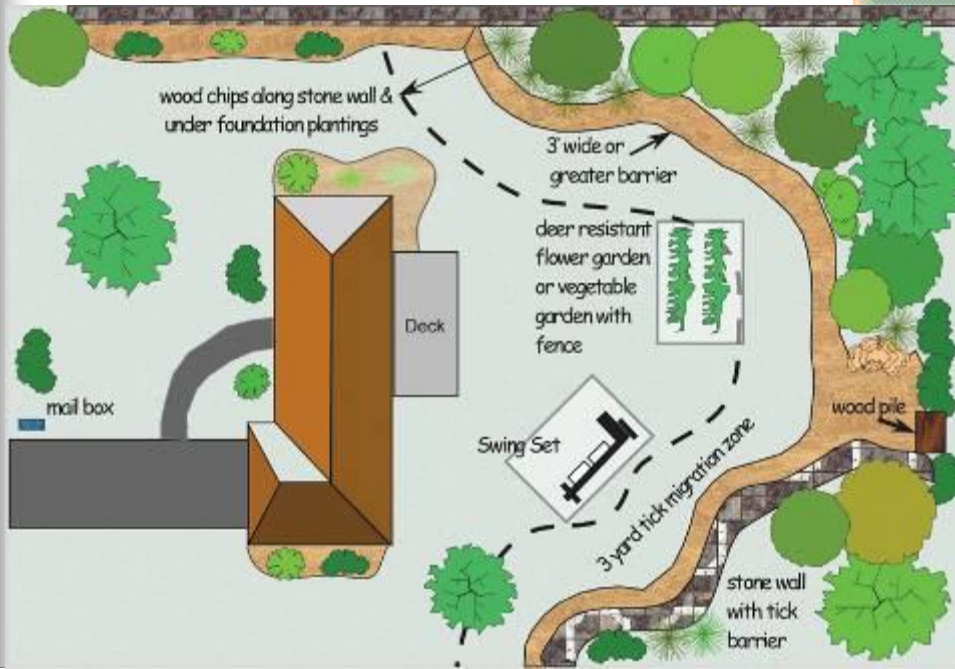


**Think
First...**



**Spray
Last!**

Look at the big picture



Make plans to manage specific problems

Do you need a pesticide?

- First identify the pest
- Is it *really a problem*
- Try cultural or sanitary controls
- Encourage the “Good bugs”
- Replace with resistant varieties



Diagnosis **murder??**

- Is it a pest problem?
 - Often what's normal for the plant is mistaken for a pest or disease
 - Variegation
 - Reproductive structures



Is this a disease?



Who's been chewing here?



They only
come out at
night.



The real culprit!



“The gardener’s best buddies”



Japanese Beetle

- Select non-preferred shrubs and trees (avoid linden, roses, crabapples, grapes, raspberries)
- Hand-pick beetles (but leave the parasitized beetles)
- Cover susceptible plants with protective netting
- Treat turf in early August if above threshold (8-20 grubs/sq. ft)
- Avoid traps
- Use a trap plant (soybean, zinnia, pole beans, etc.)



Lily Leaf Beetle

- Plant daylilies instead of true lilies
- Hand pick beetles and larvae. Squish eggs.
- Space plantings to allow good sunlight penetration.
- Least-risk pesticide if needed.
- Maybe *Tetrastichus setifer* will save us



Viburnum leaf beetle

- Over-winters as egg deposited into holes chewed into twigs, then capped. Twig has rough appearance.
- Eggs hatch in May, larvae feed together in groups on leaves.
- Adults found mid-July to first frost.



T. Murray, WSU



Viburnum Leaf Beetle Control

- Prune out or apply horticultural oil to egg-infested branches in fall.
- Apply insecticidal soap (eg Safer's Soap) to larvae about 1-week after egg hatch in spring.

- Plant resistant cultivars
(www.hort.cornell.edu/vlb/suscept.html)

– **Some 'resistant' cultivars:**

- *V. cassinoides*, *witherod viburnum* -native
- *V. plicatum* var. *tomentosum* (doublefile viburnum),
- *V. carlesii* (Koreanspice viburnum),
- *V. burkwoodii* (Burkwood viburnum),
- *V. × juddii* (Judd viburnum),
- *V. lantanoides* (alnifolium) (Hobblebush) - native
- *V. lentago* (Nannyberry) - native



Cultural controls

- **Landscape design**
 - replace “susceptible” or chronically pest-prone plants with resistant or non-susceptible plants
 - increased plant diversity and habitat complexity can increase natural enemies present (Shrewsbury 1996)



Cranberry Viburnum



Siebold viburnum

Cultural controls

- **Plant health and cultural requirements**
 - **fertilization: over fertilization (the “aphid effect”)**
 - Overfertilizing may help the pest more than the plant
 - **water management: proper irrigation**
 - **planting site: choose the right plant for the site**
 - **mulching: pull mulch away from the trunk to decrease pest/disease potential**
- **Sanitation: raking leaves to reduce fungi**



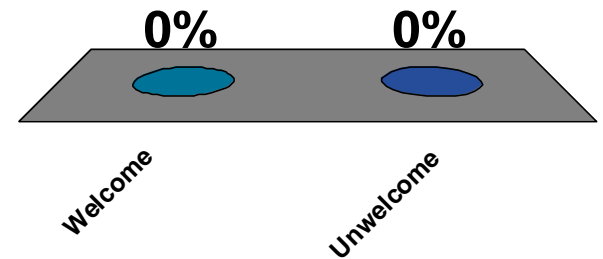
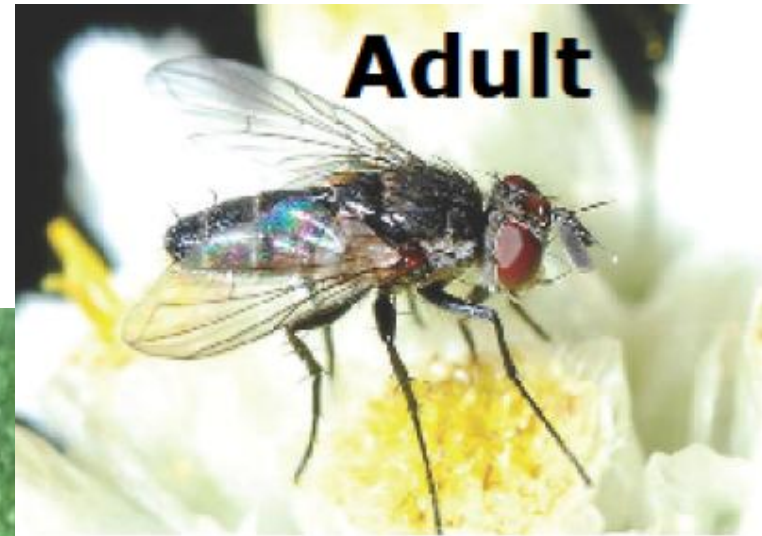
Mechanical controls

- Exclusion by screens, barriers
- Pruning infested plants
- Hand removal
- Shake & capture



Welcome or Unwelcome?

1. Welcome
2. Unwelcome



Tachinid fly (the so-called “winsome fly”) laying an egg on a Japanese beetle adult

Istocheta (=Hyperecteina) aldrichi
Introduced into US from Japan
in 1922

Adults emerge Late June/July,
feed on honeydew, nectar

Lay up 100 eggs in two weeks

Eggs hatch 1 day later, dig
into beetle

Kills beetle in 5-6 days

Just before death, beetle digs
into ground where fly spend
winter as pupa



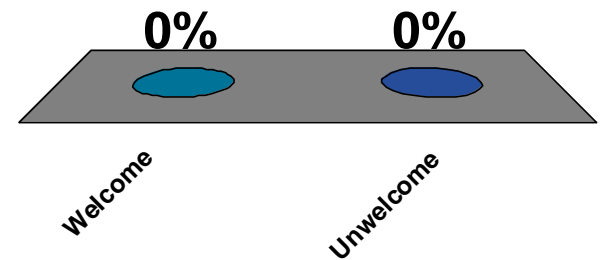
Joshua P. Basham
T.S.U. Otis L. Floyd Nursery Research Center
McMinnville, TN 37110-1367
From Point Sebago Golf Course, Casco, Maine

We love the good “bugs!”



Welcome or Unwelcome?

1. Welcome
2. Unwelcome

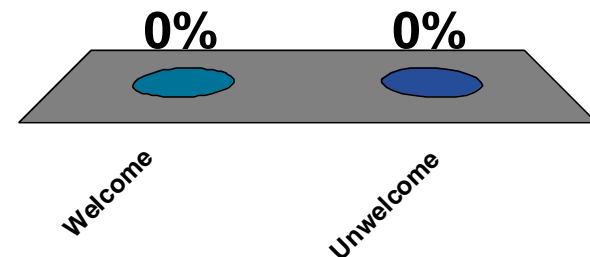


Good bug in action



Welcome or Unwelcome?

1. Welcome
2. Unwelcome



Flower fly larvae eat aphids!



FJ SANTANA

Science fiction monster?



Delicate beauty



Spare the Sprays to Protect Beneficial Insects



- Dragonflies
- Spiders
- Small parasitic wasps
- Predatory mites
- Syrphid flies
- Ground beetles



Habitat enhancement for beneficials



Many beneficials, as adults, larvae, or both, require pollen and/or nectar as dietary supplements

Key is to provide a series of plants that, collectively, provide continuous nectar/pollen supply

Many of the same plants that provide food and habitat for natural enemies also provide resources for pollinators



Bloom Timing of Native Plants Attractive to Beneficial Insects

Native plant	Natural enemies	Bees	Bloom Period						
			May	Jun	Jul	Aug	Sep	Oct	
wild strawberry	★★	★	■	■					
golden Alexanders	★★★	★★	■	■					
Canada anemone	★★★	★		■	■				
penstemon	★★	★★		■	■				
angelica	★★★	★		■	■				
cow parsnip	★★★	★		■	■				
sand coreopsis	★★★	★		■	■	■	■		
shrubby cinquefoil	★★★	★		■	■	■	■	■	
Indian hemp	★★★	★		■	■	■	■		
late figwort	★★	★★			■	■	■	■	
swamp milkweed	★★	★★			■	■	■	■	
Culver's root	★★	★★★				■	■	■	
yellow coneflower	★★★	★★				■	■	■	
nodding wild onion	★	★★				■	■	■	
meadowsweet	★★★	★★				■	■	■	
yellow giant hyssop	★★	★★★				■	■	■	
horsemint	★★★	★★				■	■	■	
Missouri ironweed	★★	★★				■	■	■	
cup plant	★★★	★★★				■	■	■	
pale Indian plantain	★★	★★				■	■	■	
boneset	★★★	★★				■	■	■	
blue lobelia	★★★	★★★				■	■	■	
pale-leaved sunflower	★★★	★★				■	■	■	
Riddell's goldenrod	★★★	★★★						■	■
New England aster	★★★	★★						■	■
smooth aster	★★	★★						■	■

KEY
 ★ good
 ★★ better
 ★★★ best

Pretty ornamentals? Or Pests?



Who you gonna call?



PESTICIDE REGULATIONS

- Board of Pesticides Control
207-287-2731

PEST PROBLEMS

- Cooperative Extension
800-287-0279
- Maine Forest Service
207-287-2431

PESTICIDE POISONING

- Northern New England
Poison Center
800-222-1222

www.thinkfirstspraylast.org • www.gotpests.org • www.yardscaping.org

BPC Web Pages

The screenshot shows the homepage of the Maine Board of Pesticides Control. At the top, there is a navigation bar with 'Maine.gov' and links for 'Agencies | Online Services | Help'. Below this is a banner for the 'Maine Board of Pesticides Control'. The main content area is divided into several sections: 'Board Biz and Other News' featuring a 'Next Board Meeting: Nov. 5' and 'Got Pests? We have solutions!'; 'BPC Inspector Vacancy - Bangor Area'; 'New Maine Pesticide Notification Registry' with 'SIGN UP' and 'DOWNLOAD' buttons; 'Bed Bugs' with a link to 'What schools need to know'; 'School IPM' with 'What you should know'; 'Chapter 26' for 'Standards for Indoor Pesticide Applications'; and 'Turf Best Management Practices'. A sidebar on the left contains links for 'ABOUT BPC', 'CERTIFICATION & LICENSING', 'PRODUCT REGISTRATION', 'LAWS & REGULATIONS', 'ENFORCEMENT', 'WATER QUALITY PROGRAM', 'DOWNLOAD LIBRARY', and 'CONTACT BPC'. A 'Popstar Links' section on the right lists various resources like 'Late Report of Terrestrial Fisheries' and 'Your Flight to Noxious Pesticide Notifications'. A green 'ASK the EXPERT' button is also visible.

www.thinkfirstspraylast.org



www.gotpests.org



The screenshot shows the 'Got Pests?' website, which is a diagnostic tool for pest identification. The main heading is 'Got Pests?' with a search bar. Below the heading, there are several sections: 'Got Pests?' with a description of pests and a search form; 'Where is it found?' with a grid of categories including HOME, LAWNS & YARDS, TREES & SHRUBS, FLOWERS, FRUIT, VEGETABLES, PEOPLE & PETS; and 'What kind of pest is it?' with a grid of categories including WEED, PLANT DISEASE, BUG, and OTHER CARRIER. A sidebar on the right contains links for 'SEARCH INFO', 'BPC Home', 'BPC Home Page', 'Maine Board of Pesticides Control', 'Maine Department of Agriculture', 'Maine Pesticide Service', 'Maine Department of Environmental Protection', 'Maine Department of Health and Human Services', 'Maine Department of Education', 'Maine Department of Transportation', 'Maine Department of Public Safety', 'Maine Department of Corrections', 'Maine Department of Health and Human Services', 'Maine Department of Education', 'Maine Department of Transportation', 'Maine Department of Public Safety', 'Maine Department of Corrections', 'Maine Department of Health and Human Services'. A footer at the bottom contains copyright information: 'Copyright © 2008 ME. All rights reserved.'

Do you need a pesticide?

- Is the pest in a susceptible stage?
- Application timing is critical
- Is the pest still present?



Is the pest protected?



Birch leafminer



Birch leafminer

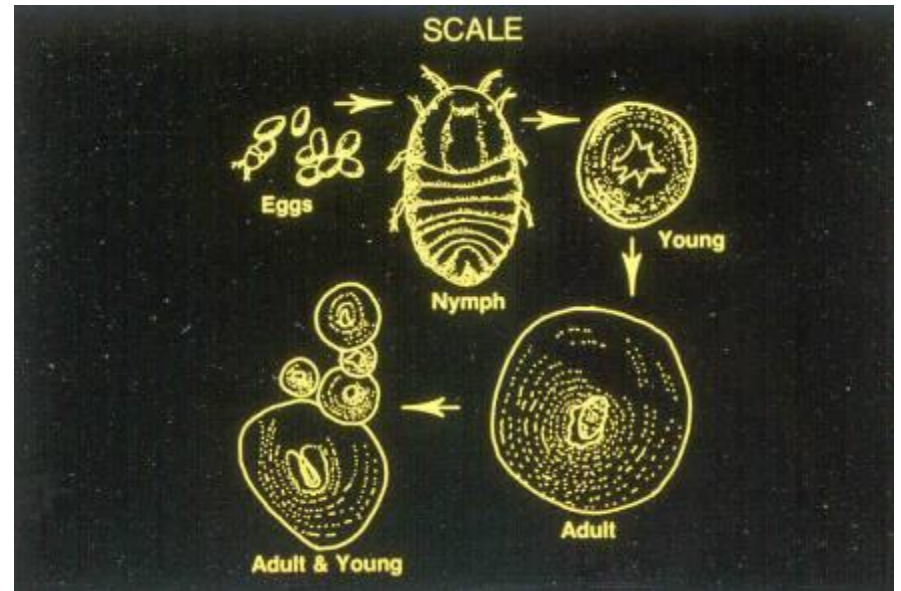


Birch leafminer

Don't apply when you can't hit a susceptible target



Timing is everything?



Nobody home!



Eriophyid gall
mite



Oak apple gall wasp

The key to proper use

■ Read the label!

Systemic Insect Control

TRUSTED SINCE 1926
BONIDE

• **Controls:** Aphids, Flower Thrips, Leafminers, Mealybugs, Spider Mites, Tent Caterpillars, Whiteflies, and other listed insects.

• **Use on:** Roses, Flowers, Ornamentals, Shrubs, and Trees.

ACTIVE INGREDIENT
Acephate (O, S-dimethyl acetylphosphoramidothioate) 9.4%

OTHER INGREDIENTS 90.6%

KEEP OUT OF REACH OF CHILDREN
CAUTION
(See back panel booklet for additional precautionary statements.)

Net Contents 16 FL. OZ. (473 ML)

XXXXXXXX

941

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION: Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. When handling this product, wear safety glasses, chemical resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride or viton), long pants, and long-sleeved shirt. When using outdoors, spray with the wind to your back and do not use when wind speeds are 10 mph or more. Wash the outside of the gloves with soap and water before removing. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

ENVIRONMENTAL HAZARDS: This pesticide is toxic to birds. Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes. Cover or soil-incorporate spills. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product, or allow it to drift to blooming crops or weeds, if bees are visiting treatment area.

PHYSICAL OR CHEMICAL HAZARDS: Flammable. Keep away from heat and open flame.

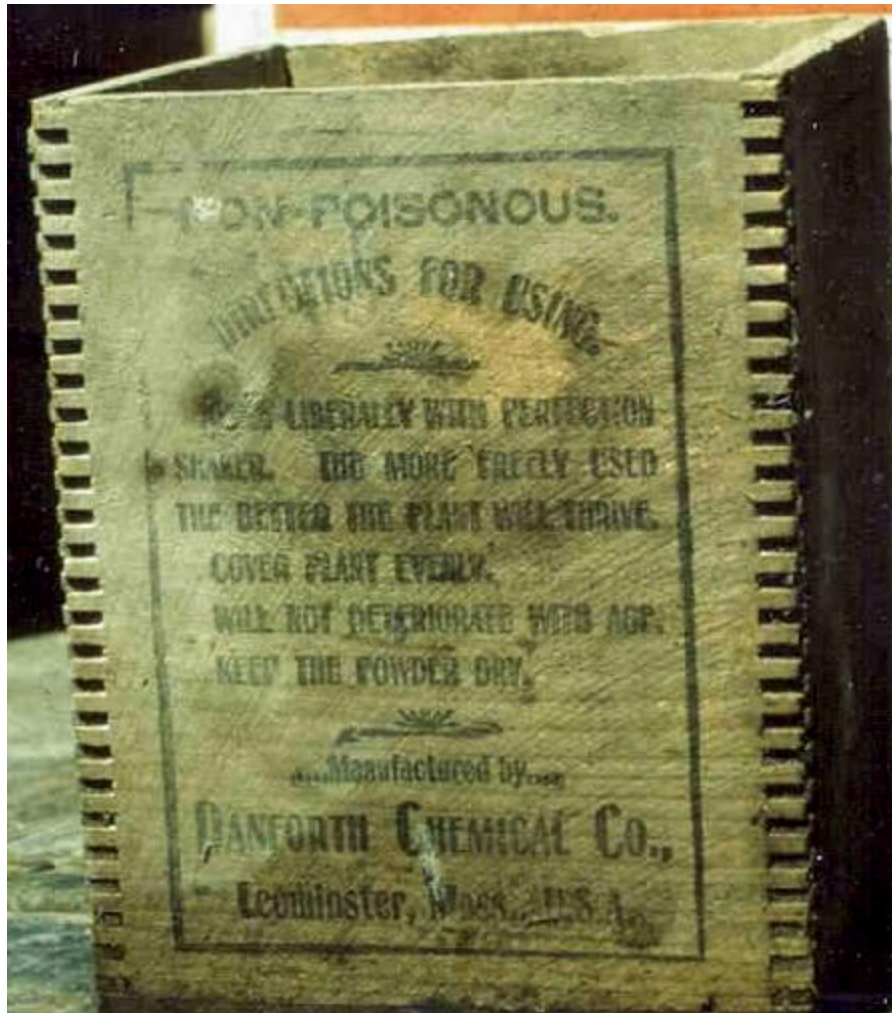
NOTICE: To the extent consistent with applicable law, buyer assumes all risks of use, storage or handling of this product not in accordance with directions.

No endorsement intended or implied

The old days



Great directions!



Contained 5% lead oxide & 47% zinc oxide

“Bug Death is a patented non-poisonous powder, and is entirely different from anything that has ever been placed on the market, and overcomes all the objections to the deadly poisons that the farmers have been obliged to use in the past. It is just as effectual as Paris Green and other dangerous insect powders. It is sure death to the potato, squash and cucumber bugs, currant and tomato worms, also other plant and vine eating pests.

The deadly effect on bugs will not always be as quick, but it is just as sure. Contrary to the arsenic preparations, it is a benefit to the plant, and the more freely used the better the plant will thrive, and for potatoes when blight is prevalent, the extra yield will more than pay all expense of Bug Death.”

Today's label



ORTHOMAX[®]
GARDEN INSECT DUST

USE ON VEGETABLES, FRUITS, FLOWERS & SHRUBS

QUICK CONNECT[®] SPRAYER



Remove sprayer. Pull cord **ALL THE WAY OUT**.

Insert red plug into spout (on cap) until it clicks.

Flip up spout. Open nozzle at end of sprayer.

Ortho Bug-B-Gon[®] MAX[®] controls more than 100 garden and nuisance pests without harming roses, flowers or shrubs. Reapply as directed for a more beautiful garden.

PRODUCT FACTS

KILLS BUGS	Garden Pests: Aphids, beetles, caterpillars, whiteflies and other garden pests.
	Nuisance Pests (outdoors): Ants, cockroaches, spiders, ticks (including ticks that transmit Lyme disease) and other nuisance pests.
WHERE TO USE	On roses, flowers, shrubs, vegetables and fruits. Outdoor surface of buildings, porches and patios.

 **Questions, Comments or Medical Information?**
Call 1-800-225-2883 www.ortho.com

Specially formulated for residential use.

80% SIZE
12-digi UPC
(not FPO lessed)
For Position Only

0 71549 01703 3
5-26-05



Manufactured for **The Ortho Group**
P.O. BOX 190
Marysville, OH 43040
Form LB00000000X

EPA Reg. No. 102-1582-239
EPA Est. 239-1A-3, 5896-MO-1A
Superscript is first letter
of lot number
Made in USA

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

FOR BEST RESULTS

SHAKE WELL BEFORE USE

HOW TO APPLY

Adjust spray nozzle to give a fine spray. When done, flip down spout to close. **NO NEED TO DISCONNECT TRIGGER SPRAYER.** Close nozzle on trigger sprayer. Snap sprayer back in place.

Garden Pests: Hold sprayer about 12 inches from plant. Thoroughly cover all plant surfaces until slightly wet, but not to the point of runoff.

WHEN TO APPLY

Apply as necessary to maintain control, waiting at least 7 days between each application.

GARDEN INSECTS CONTROLLED

On Ornamental Plants Including: Roses, Flowers, Shrubs and Small Trees

Aphid, armyworm, balsam woolly adelgid, buckhorn aphid, cabbage looper, cucumber beetle (adults—spotted & striped), cutworm, European pine sawfly, fall webworm, flea beetle, grasshopper, gypsy moth, imported cabbageworm, Japanese beetle, leafhopper, looper, Northern pine weevil, pine chafer, pine coreid bug, red pine sawfly, redheaded pine sawfly, saltmarsh caterpillar, spittlebug, tent caterpillar, and whitefly.

On Listed Vegetables and Melons

Alfalfa caterpillar, alfalfa looper, aphid, armyworm, artichoke plume moth, beet armyworm, buckhorn aphid, cabbage looper, carrot weevil, celery looper, drench bug, Colorado potato beetle, corn earworm, corn rootworm (adults), cowpea curculio, cucumber beetle (adults—spotted & striped), cutworm, diamondback moth, European corn borer, flea beetle, grasshopper, green cloverworm, imported cabbageworm, leafhopper, looper, lygus bug, Mexican bean beetle, painted lady caterpillar, pea aphid, pea weevil, pepper weevil, pickleworm, potato leafhopper, potato psyllid, potato tuberworm, ringworm, saltmarsh caterpillar, sap beetle, Southwestern corn borer, squash bug, squash vine borer, stalk borer, stinkbug, tarnished plant bug, tobacco hornworm, tomato fruitworm, tomato hornworm, tomato pinworm, vegetable leafminer, velvetbean caterpillar, Western bean cutworm, and whitefly.

On Listed Berries and Small Fruit & Nut Trees

Apple aphid, black cherry aphid, codling moth, leafrollers, leafhoppers, green fruit worm, plant bugs, oblique banded leafroller, variegated leafroller, tentiform leafminer, San Jose scale (on fruit only), tufted apple budmoth, plum curculio, Oriental fruit moth, apple maggot, red-banded leafroller, lesser appleworm, rosey apple aphid, periodical cicada, pear psylla, pear slug, navel orangeworm, peach twig borer, filbert worm, peach tree borer, lesser peach tree borer, cherry fruit fly, American plum borer, pecan weevil, hickory shuckworm, pecan nut casebearer, pecan aphids, pecan spittlebug, pecan stem phylloxera, pecan leaf phylloxera, walnut aphid and walnut husk fly.

VEGETABLES	DAYS TO WAIT TO HARVEST
Artichoke	7
Broccoli	3
Cabbage	3
Carrots	7
Cauliflower	3
Collards	7
Cucumbers	3
Dry Beans	21
Dry Peas	21
Eggplant	7
Green Peas	3
Peppers	7
Potatoes	7
Pumpkin	3
Radishes	7
Snap Beans	3
Squash	3
Sweet Corn	1
Tomatoes	1

BERRIES & MELONS	DAYS TO WAIT TO HARVEST
Caneberries (blackberries, loganberries, red raspberries & black raspberries)	21
Elderberries	21
Gooseberries	21
Melons	3

SMALL FRUIT & NUT TREES (Such as container grown, dwarf or young trees)	DAYS TO WAIT TO HARVEST
Almond	21
Apple	21
Apricot	14
Cherries	14
Filberts	21
Nectarines	14
Peaches	14
Pecans	21
Pears	28
Plums	14
Prunes	14
Walnuts	21

NUISANCE PESTS CONTROLLED


Ants, cockroaches (including German and Asian cockroaches), crickets, palmetto bugs, sowbugs, pillbugs, spiders, and ticks that transmit Lyme disease.

HOW TO APPLY

NUISANCE PESTS: Apply directly to listed pests in outdoor areas.
OUTDOOR SURFACES: Spray buildings, porches, patios, garages, and other areas where bugs have been seen or are found. Do not spray near fishponds or other bodies of water.

WHEN TO APPLY

Apply as necessary to maintain control, waiting at least 7 days between each application.

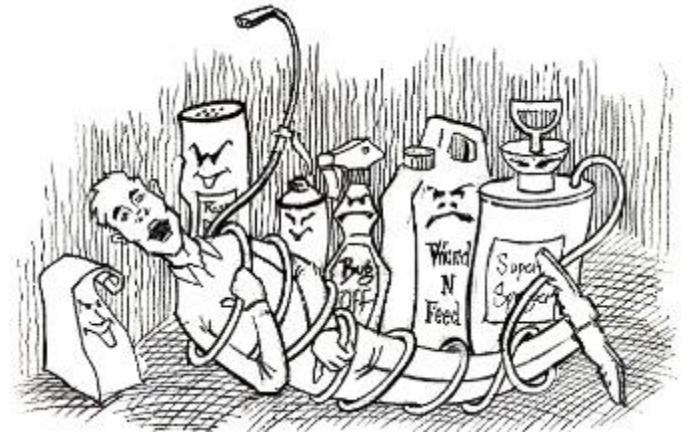
 People and pets may enter treated area after spray has dried.

Avoid contamination of food or feedstuffs.

No endorsement intended or implied

Purchase wisely

- Measure the area needing treatment
- Only purchase what you need “right now”
- Check the label for:
 - re-entry
 - site & pest
 - days to harvest
 - personal protective equipment needs



Prepare for the application

- Read the label
- Wear all PPE
- Mix carefully
- More is NOT better
- Never use more than the label directs



Apply properly & be cautious

- Only treat infested areas
- Spot treatments conserve beneficial organisms
- Avoid broadcast treatments
- Keep the plant's condition in mind
- Check coverage & monitor control
- Only repeat application if the label allows



Why treat the whole tree?



Bronze birch borer



Why treat the whole tree?



Eastern tent caterpillar

Broadcast applications

- Broadcast applications of lawn herbicides can cause weird results



- Broadcast applications of any pesticide are prohibited within 25 feet of any wetland or water body



If you must apply a pesticide

- Wait long enough for the product to work

- Examples



No endorsement intended or implied

If you must apply a pesticide

- Keeps records of what was used and how well it worked
- Review your records before treating again next season

Pesticide Application Log															
Date	Time Start and Finish	Address, Town, and Specific Location	Size of Treated Area	Sensitive Area Yes/No	Site or Crop	Target Pest	Wind ¹ <small>(specify direction) (outdoor applics.)</small>	Weather Conditions: ² <small>(outdoor applications only)</small>			Pesticides and Diluent Applied	Rate Description			Applicator Name and license No.
								Temperature	Cloud Cover	Time Used		Unithatcd	Mix	Mix Ratio	
											1. 2. 3. 4.				
											1. 2. 3. 4.				
											1. 2. 3. 4.				

If you must apply a pesticide

- Clean yourself and you equipment
- Apply rinse water to the application site
- Wash contaminated clothing separately




U of A
UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE

PRERINSE:
Use 1 of the 2 methods:
-Rinse in separate tub or pail
-Agitate in automatic washer
-Rinse off garments outdoors

WASHER LOAD
-Wash SEPARATELY from all clothes
-Wash contaminated clothing with the SAME pesticide together
-Rinse 2 or 3 times, if necessary

LOAD SIZE
-Wash only a FEW garments at a time
-Laundry garments DAILY when applying pesticide daily

RINSE MACHINE THOROUGHLY AFTER LAUNDERING CONTAMINATED CLOTHING



Tips for Laundering Pesticide-Contaminated Clothing

WATER LEVEL
-Use FULL water level




WATER TEMPERATURE
-Use HOT water, 120°F/50°C

WASH CYCLE
-Use NORMAL 12-minute wash cycle

DETERGENT
-Use a HEAVY DUTY liquid detergent
-Use recommended amount

ADDITIVES
-BLEACH or AMMONIA do not affect pesticide removal
-NEVER use BOTH

DRYING
-LINE DRY GARMENTS





Cooperative Extension Service

OTHER TIPS:
-Wear disposable overalls over work clothes while handling pesticides.
-Remove contaminated clothing outdoors or in an entry. If a granulate pesticide is used, shake clothing outdoors.

-Use clothing worn while handling pesticides for that use only. Keep separate from all other clothing.
-If garments have been exposed to HIGHLY TOXIC CONCENTRATED pesticides, rewash them 2 or 3 times.

-Always wear WATERPROOF GLOVES when handling highly contaminated clothing.

For more information:
Contact Your Local County Cooperative Extension Office



YardScaping...

for a healthy Maine



The YardScaping Partnership

- Allen, Sterling & Lothrop
- Bar Mills Ecological
- Breakwater School
- Carroll Associates, Landscape Architects
- Casco Bay Estuary Partnership
- City of Portland
- Congress of Lake Associations
- Friends of Casco Bay
- Friends of Scarborough Marsh
- Gnome Landscapes, Design & Masonry
- Jacobs Edwards and Kelcey
- Kennebunkport Conservation Commission
- LakeSmart Program
- Libby's Landscaping and Greenhouse
- Lisa Cowan, studioverde landscape architecture + design
- Maine Board of Pesticides Control
- Maine Department of Agriculture
- Maine Department of Environmental Protection
- Maine Landscape & Nursery Association
- Maine Organic Farmers & Gardeners Association
- Maine Soil & Water Conservation Districts
- Maine State Planning Office
- Maine Volunteer Lake Monitoring Program
- Natural Resources Conservation Service
- New England Organics
- O'Donal's Nurseries
- PJC & Company Ecological Land Care
- Portland Trails
- Shaw Brothers Construction
- Skillin's Greenhouses
- Southern Maine Community College
- Think Blue Maine Program
- Town of Brunswick
- University of Maine Cooperative Extension

The Partnership is very diverse!

www.yardscaping.org



for a healthy Maine

YardScaping

- A new paradigm?
- Some call it “Sustainable Landscaping” or “Ecological Landscaping”
- We want to keep it simple
- <http://youtu.be/cwaSKjymQDc>



YardScaping Mission

- YardScaping hopes to inspire Maine people to create and maintain healthy landscapes through ecologically based practices that minimize reliance on water, fertilizer and pesticides.



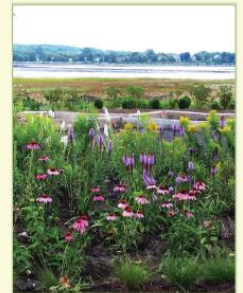
YardScaping Gardens at Back Cove

LOW MAINTENANCE PLANTS

You can grow low maintenance plants like these in *your* yard.

The trees, shrubs and perennials you see here:

- ◆ resist pest problems
- ◆ thrive in Maine
- ◆ are non-invasive
- ◆ grow back each year
- ◆ require less water
- ◆ require less fertilizer



Want to get involved or learn more?
Visit www.yardscaping.org

The Ten-ets of YardScaping

- Promote buffers
- Promote appropriate plants - native plants and non-invasive alien plants
- Reduce lawn area
- Reduce runoff
- Reduce reliance on pesticides, fertilizers and water
- Promote low input lawns and landscapes
- Promote YardScape diversity
- Create wildlife habitats
- Right plant, right place, right use
- Commonsense pest management (IPM)



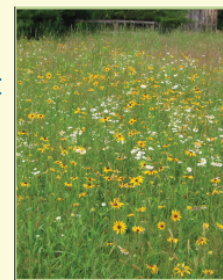
YardScaping Gardens at Back Cove

LOW INPUT YARD CARE

**When it comes to gardening,
less is usually more.**

Low input yards require a little more brain, a lot less brawn and leave you with more free time:

- ◆ plant drought and pest tolerant plants
- ◆ mow lawns at the highest setting and leave the clippings
- ◆ replace lawn with shrubs or wildflowers
- ◆ mulch plants to keep moisture in and weeds out



**Want to get involved or learn more?
Visit www.yardscaping.org**

Use site appropriate, non-invasive plants

- Native plants are often well adapted
 - Fewer problems, less work, more rewards, **but not all are problem free**, e.g., viburnums
- Invasive plants are easy to grow but crowd out native vegetation
 - Our local forest habitats are changing rapidly
 - Invasive plants can ruin wildlife habitat
 - Invasive plants harbor more infected deer ticks



Wild Columbine



Viburnum Leaf Beetle



Oriental Bittersweet

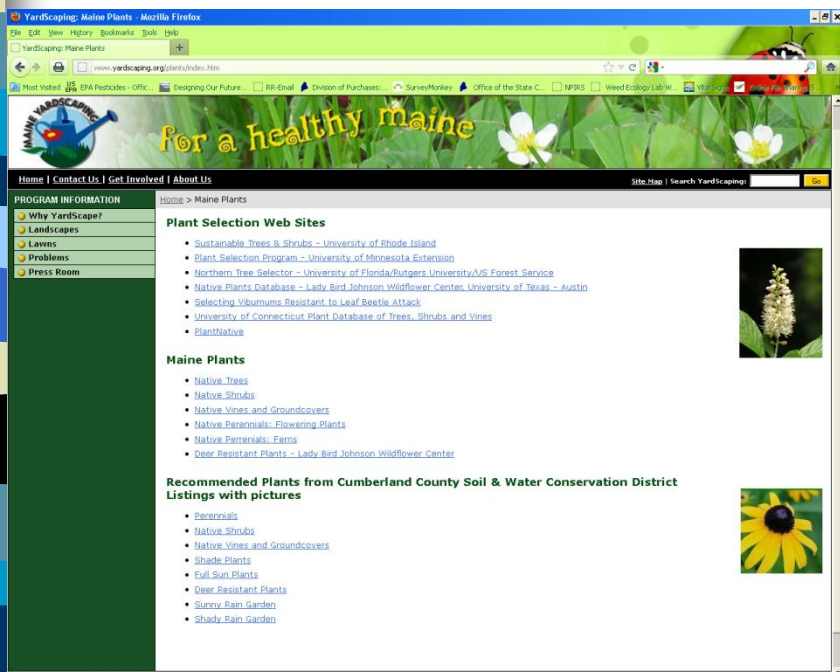
Right plant, right place, right purpose

- Choose plants based on the site conditions not just for their color
- Select plants that thrive under existing conditions rather than trying to alter the conditions to meet the needs of a plant
- Minimize disturbance of the existing landscape



Wild Cranberry Bog

Where to learn more



www.yardscaping.org/plants/index.htm



YardScaping Gardens at Back Cove

PLANT CHOICE

**Plants thrive in the proper
climate, soil and sun exposure.**

Plant a plant where its needs and your
needs are met:

- ◆ plant natives whenever possible
- ◆ don't plant invasive alien species
- ◆ choose plants that provide homes, food and shelter for wildlife
- ◆ put plants in the right climate, soil and sun exposure



Want to get involved or learn more?
Visit www.yardscaping.org

Use a diversity of plants & grasses

- Less noticeable damage from pests and disease
- Incorporate many layers of plant types
 - Trees
 - Shrubs
 - Ground covers
 - Perennials, and
 - Lawns



Create wildlife habitats

Diversity and plant layers go hand in hand with habitat creation

- Add nectar and fruit producing plants

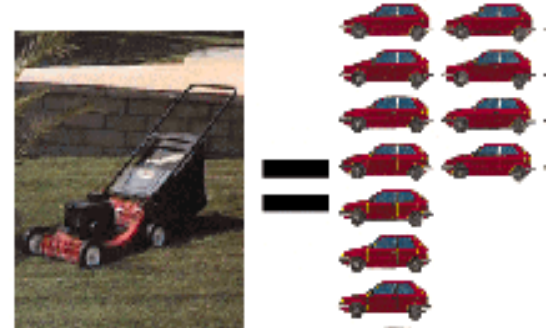
Strive for continuous blooms

- Add water, walls, feeders, woody debris



Reduce lawn area

- Reduces
 - Water & air pollution
 - Water usage
 - Maintenance
 - Costs
- Gives
 - More free time



Mower exhaust = 11 cars' exhaust

One hour of mowing = driving 400 miles

Mowers spew 87 lbs of greenhouse gases and 40 pounds of other pollutants annually



Use low input plant varieties

- No-mow fescue vs Kentucky bluegrass
- Pagoda dogwood vs flowering cherry
- River birch vs paper birch



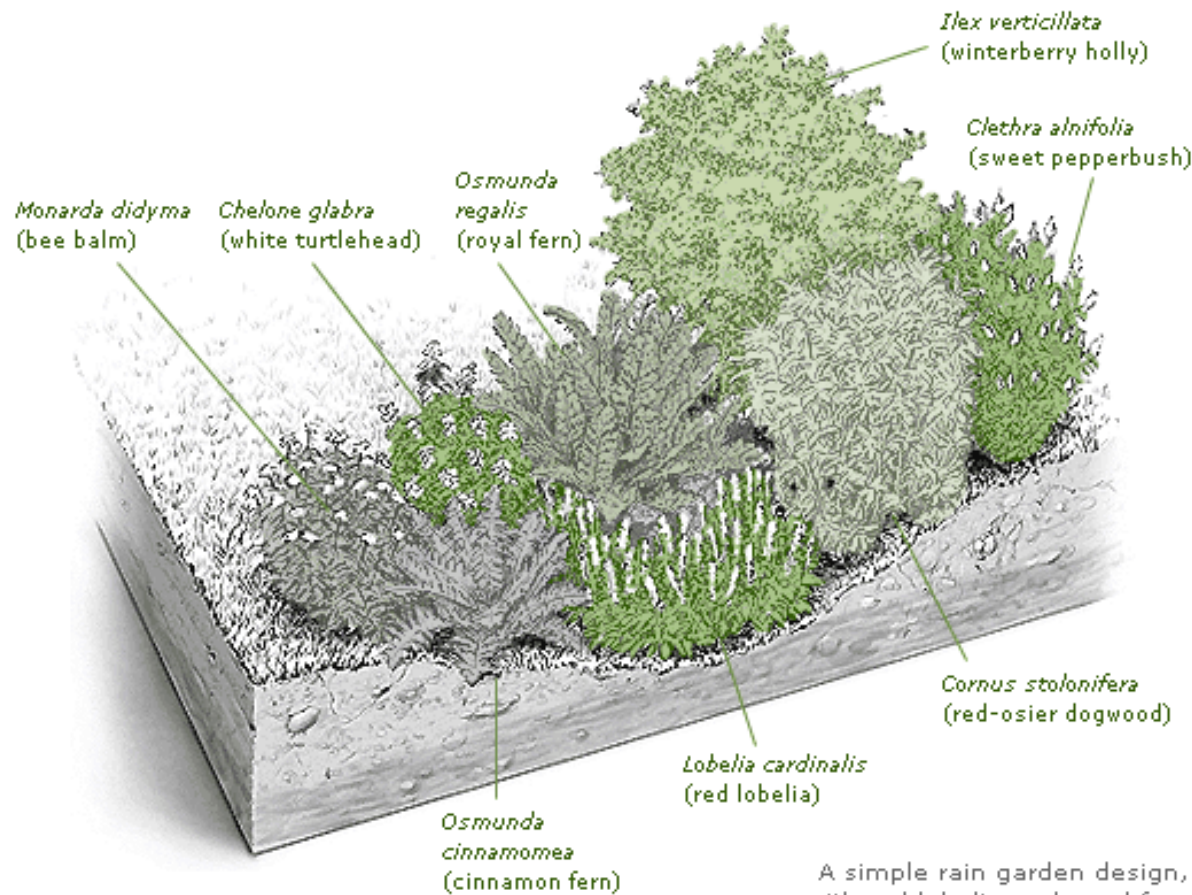
Protect lakes & streams with buffers

- Preserve existing landscape
- Winding paths
- Don't mow to the water's edge
- Leave the duff



Reduce runoff

- Reduce amount of impervious (hard) surfaces
- Create rain gardens or install rain barrels
- Direct water into vegetated areas
- Irrigate properly and only when needed



Reduce reliance on pesticides, fertilizers and water

- Grow plants that are resistant to insects & diseases
- Use plants that tolerate low fertility
- Use drought resistant plants



White Fir



Sweet Fern

Use common sense pest management

- Integrated pest management
 - Know your pest
 - Pick it, trap it or exclude it
 - Know the good bugs
 - Mow, prune or water
 - Use pesticides as last resort



YardScaping Gardens at Back Cove

MANAGE PESTS WISELY

Weed, insect and disease control products present both risks and benefits.

Follow these simple steps to protect people, pets, plants and watersheds:

- ◆ know the pest
- ◆ pull, squash or trap it
- ◆ use control products as a last resort, *if at all*
- ◆ spot treat only
- ◆ protect beneficial organisms



**Want to get involved or learn more?
Visit www.yardscaping.org**

Maine Board of Pesticides Control



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ABOUT BPC

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Have a question about pest problems or pesticides you can't answer? If you've already checked [Got Pests?](#) and still can't find it, [send us an e-mail](#), including your complete address and phone number, and we'll get you an answer as soon as possible.

Board Biz and Other News

Next Board Meeting: Dec. 7



Got Pests? We have solutions!

Credit Meeting Calendar

NEW! License for Food Growers

Pesticide Notification Your Rights & Responsibilities

School IPM What you should know

Bed Bugs What schools need to know

Chapter 26 Standards for Indoor Pesticide Applications

Obsolete Pesticide Collection—Fall 2013

Mosquito Control
A Citizen's Guide

Turf Best Management Practices

Popular Links

[Mosquito & Tick Control](#)

[Bed Bugs](#)

[Pesticide Notification: Your Rights & Responsibilities](#)

[Bt Corn Online Training Video & Exam](#)

[Master Gardener Info](#)

[Worker Protection Standard](#)

[Credit Meeting Calendar](#)

[Got Pests? We have solutions!](#)

Reference Links

[Endangered Species](#)

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[University of Maine Pest Management Office](#)

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for a healthy maine

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PROGRAM INFORMATION

- [Why YardScape?](#)
- [Landscapes](#)
- [Lawns](#)
- [Problems](#)
- [Press Room](#)

Welcome to YardScaping

Can anything be more satisfying than a fertile carpet of green grass? How about a healthy landscape that features less lawn and beautiful plantings—all grown without the excessive use of pesticides, fertilizers, and water!

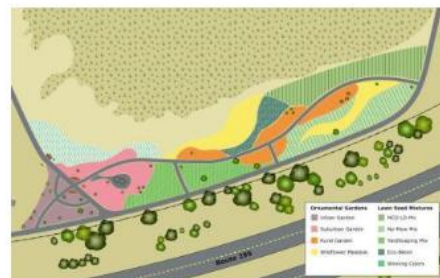
Whether you've been wringing your hands over Japanese beetles or you're tired of slaving away on your lawn, **YARDSCAPING** is for you.

Join the growing number of Mainers who have decided to change their yard care ways—for the health of the environment, people, and wildlife.



[Be a YardScaper: Plant a sign in your yard today!](#)

What's New



[Portland's YardScaping Gardens at Back Cove are complete and ready for your enjoyment!](#)

QUICK TIPS

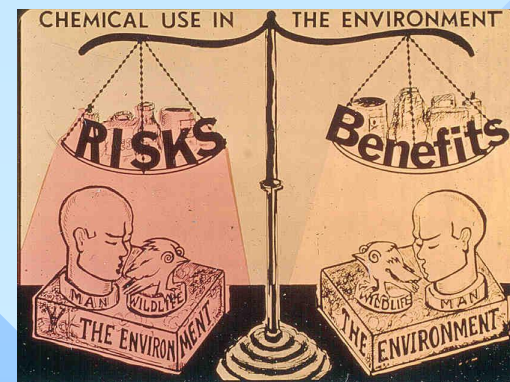
- [GotPests.org](#)
- [IPM: The Yard Saver](#)
- [Sustainable Plant Selection](#)
- [Plants to Avoid](#)
- [Native Plants: Where to buy 'em:](#)
- [Hiring a Landscape Professional](#)
- [Ecological Yard Care Resources \[PDF\]](#)

LINKS

- [YardScaping Experts](#)
- [BayScaping](#)
- [Healthy Lawncare Tips—Cumberland County Soil & Water Conservation District](#)
- [Kennebunkport Conservation Commission—Lawns for Lobsters](#)
- [Grass Seed Sources](#)
- [Maine Board of Pesticides Control](#)
- [University of Maine Cooperative Extension](#)
- [LakeSmart](#)
- [Congress of Lake Associations](#)
- [The Friends of Casco Bay](#)
- [Maine Soil and Water Conservation Districts](#)
- [The University of Maine Cooperative Extension Water Quality](#)
- [ThinkBlueMaine.org](#)
- [Portland Water District](#)
- [PlantNative](#)

Summary

- Risk = Toxicity x Exposure
- All pesticides have risks
- Reduce risks - wear PPE
- Make the benefits outweigh the risks



Please rate this presentation

1. **Wow**
2. **Helpful**
3. **Ho Hum**
4. **Crap**
5. **Bull Crap**

