Home Pesticide Use

Risks & Benefits

- Gary Fish
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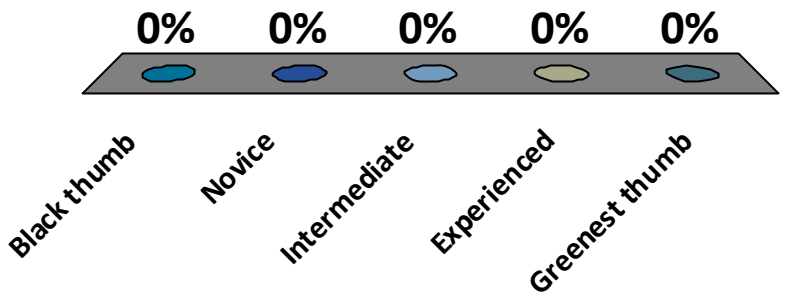
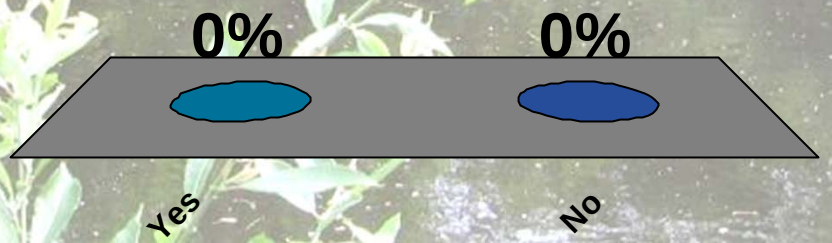
Which type of gardener are you?

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



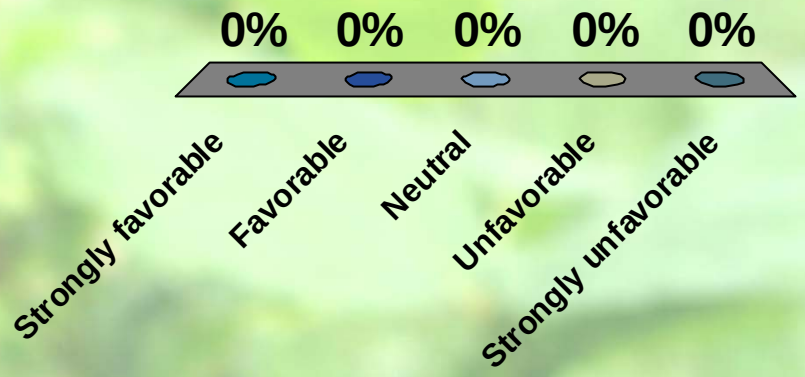
Have you ever heard of the Board of Pesticides Control (BPC)?

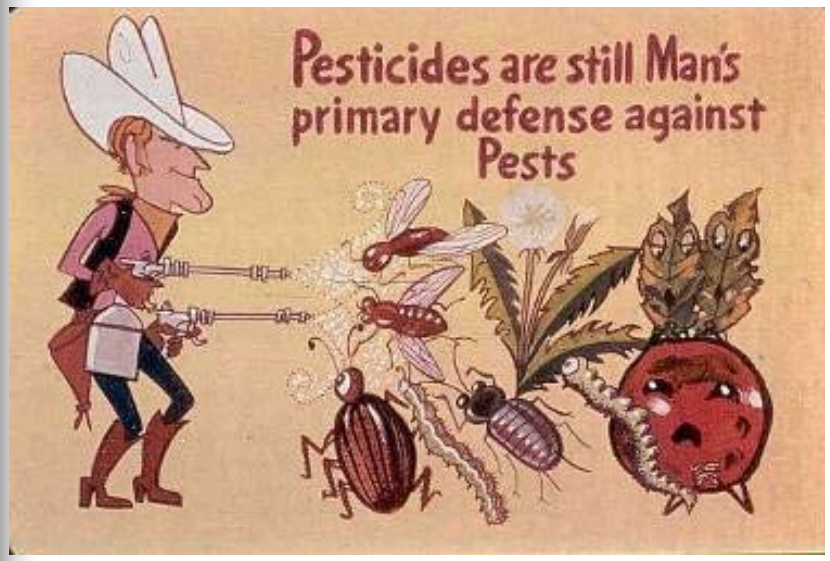
1. Yes
2. No



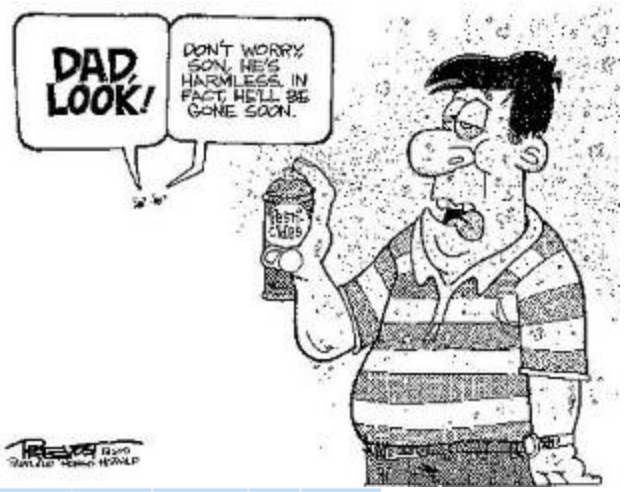
What is your opinion of the BPC?

1. Strongly favorable
2. Favorable
3. Neutral
4. Unfavorable
5. Strongly unfavorable





How we see ourselves using pesticides



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

boston.com

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Bug spray likely killed infant, injured 2 in SC

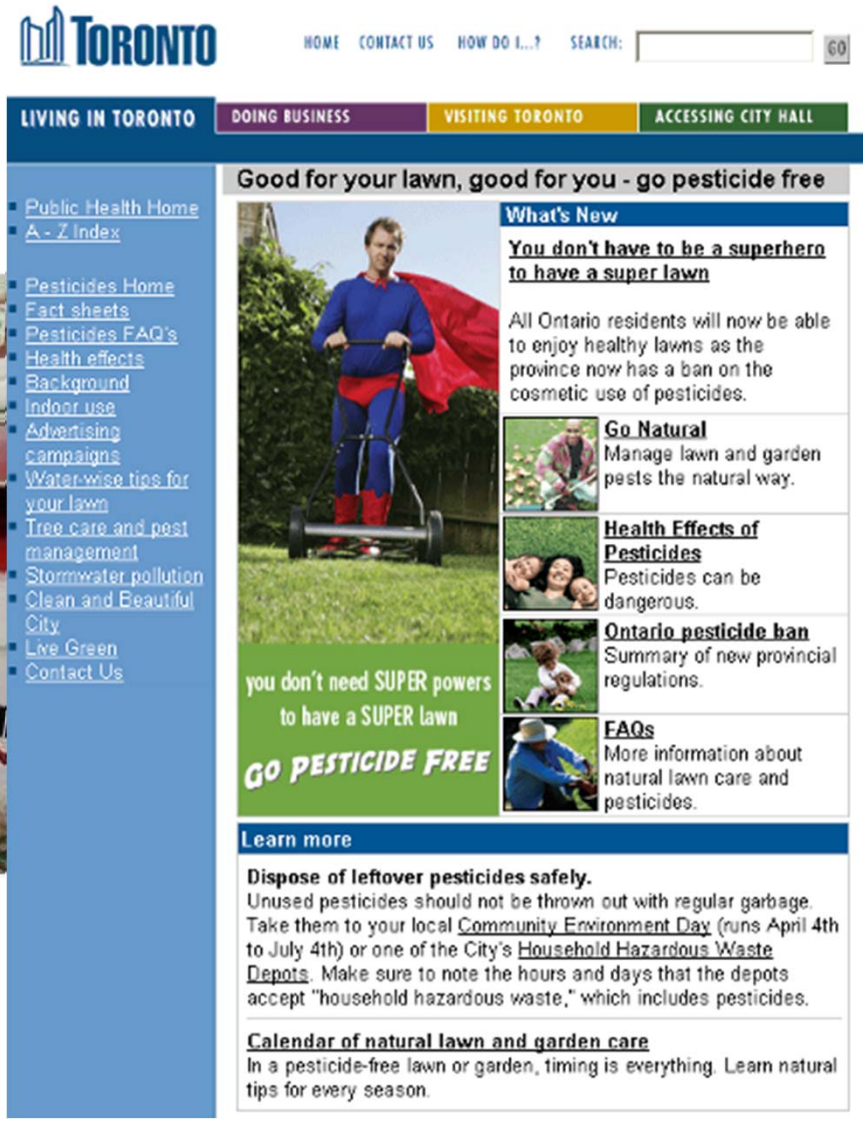
AP Associated Press

By Seanna Adcox
Associated Press Writer / November 2, 2009

E-mail | Print | Yahoo! Buzz | ShareThis Text size

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.

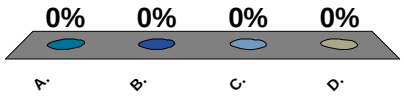
Even in Canada people still rely on pesticides



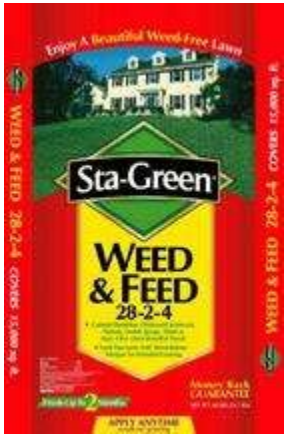
Which are pesticides?

1. A.
2. B.
3. C.
4. D.

No endorsement intended or implied

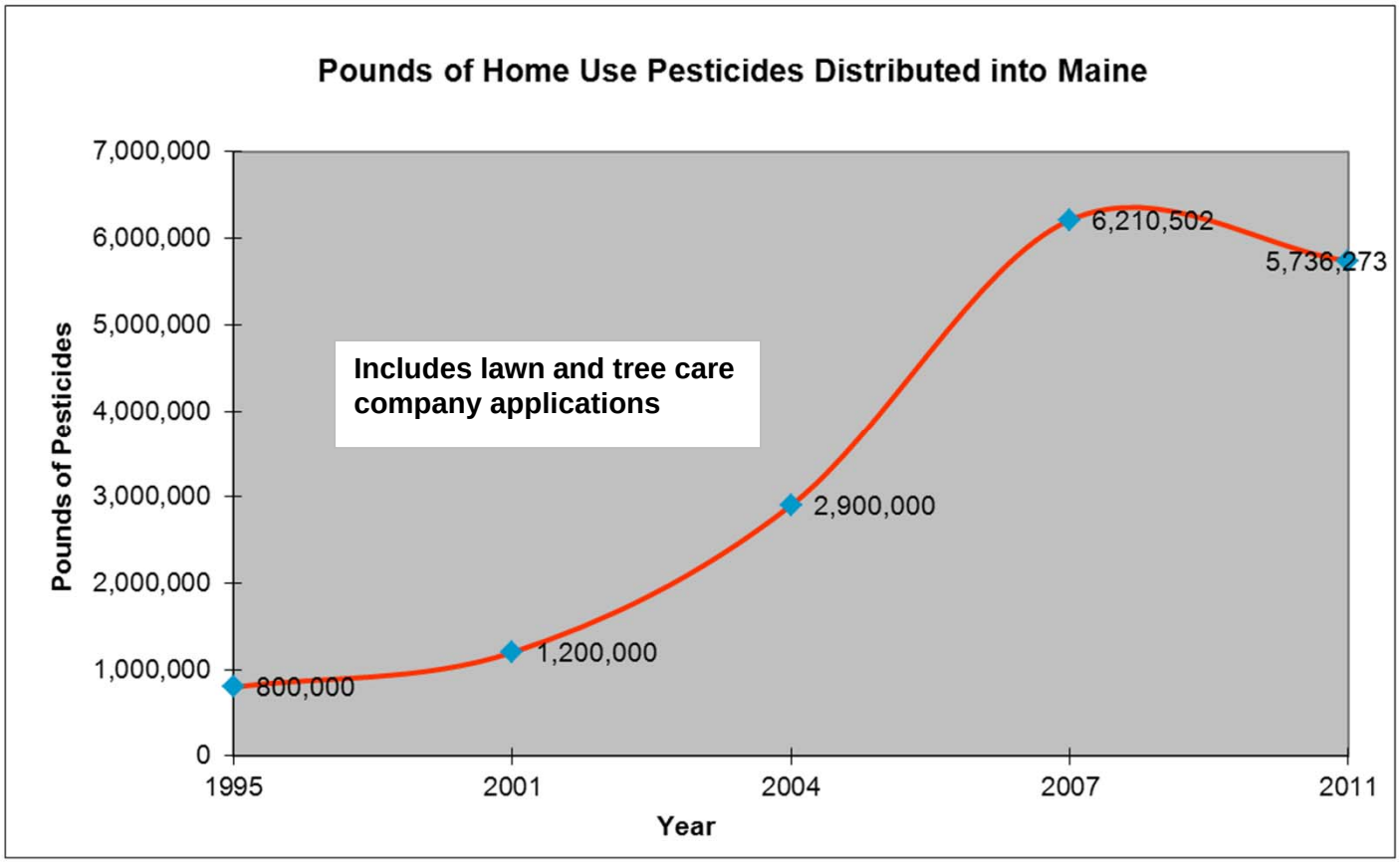


Maine pesticide use more common than perceived



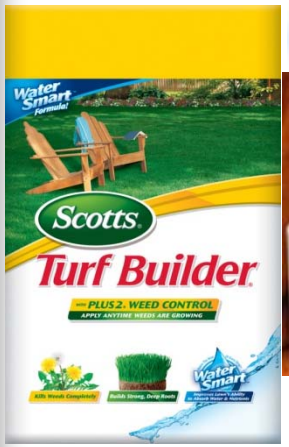
No endorsement intended or implied

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

No endorsement intended or implied

These are Pesticides?

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

YieldGard Corn Borer
YieldGard VT Triple
YieldGard VT Rootworm/RR2
HERCULEX RW HX
HERCULEX XTRA HX
HERCULEX I HX
Optimum TRIsect ABOVE/BELOW
Optimum Intrasect ABOVE/BELOW Xtra
Optimum AcreMax 1 ABOVE/BELOW
genuity VT TRIPLE PRO CORN
AgrisureViptera
AgrisureArtesian
Agrisure3000GT
AgrisureGT/CB/LL
AgrisureCB/LL/RW
Attribute INSECT PROTECTION

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 are the risks?

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

EcoSMART ORGANIC INSECTICIDE — FLYING INSECT KILLER

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

EcoSMART

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

EcoSMART Technologies

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

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No endorsement intended or implied

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

Example

GLOBAL HEALING CENTER
Natural Health & Organic Living

6. Eucalyptus oil
A great natural pesticide for flies, bees and wasps. Simply sprinkle a few drops of eucalyptus oil where the insects are found. They will all be gone before you know it

From Medline Plus – NLM NIH

http://www.nlm.nih.gov/medlineplus/druginfo/natural/700.html

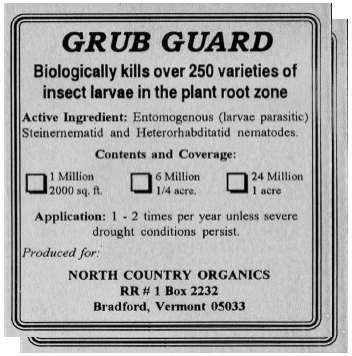
- Eucalyptus oil is **UNSAFE** when it is either taken by mouth or applied directly to the skin without first being diluted. Taking 3.5 mL of undiluted oil can be fatal. Signs of eucalyptus poisoning might include stomach pain and burning, dizziness, muscle weakness, small eye pupils, feelings of suffocation, and some others. Eucalyptus oil can also cause nausea, vomiting, and diarrhea.

  Pregnancy and breast-feeding: Eucalyptus seems to be safe for pregnant and breast-feeding women when used in food amounts. But don't use eucalyptus oil. Not enough is known about safety during pregnancy or breast-feeding.

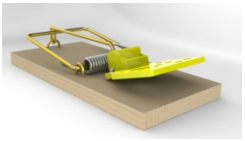
  Children: Eucalyptus oil is **UNSAFE** for children. It should not be taken by mouth or applied to the skin. Not much is known about the safety of using eucalyptus leaves in children. It's best to avoid use in amounts larger than food amounts.

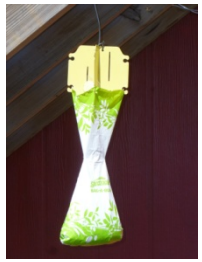
What products are NOT pesticides?

- Insect parasitic nematodes

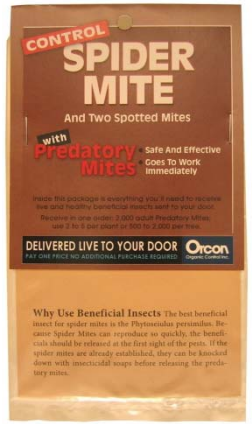


- Rodent or insect traps





- Beneficial insects or mites

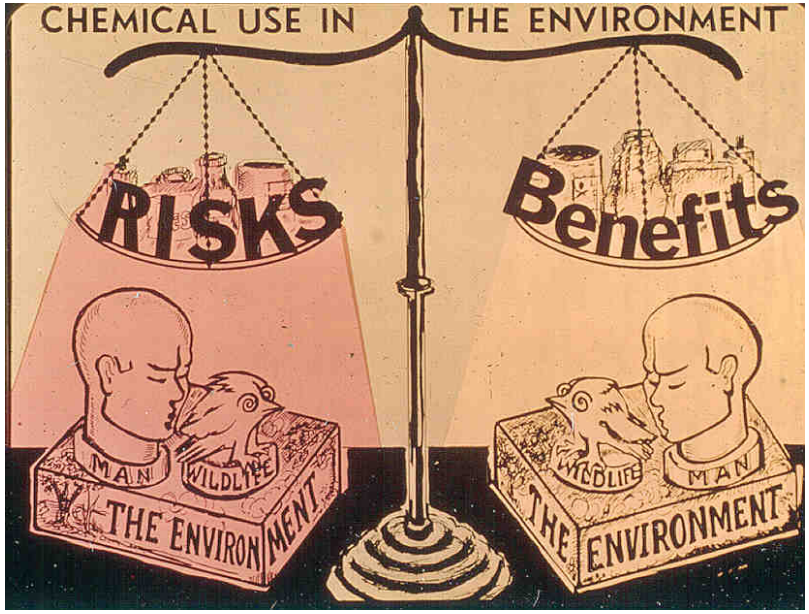


No endorsement intended or implied

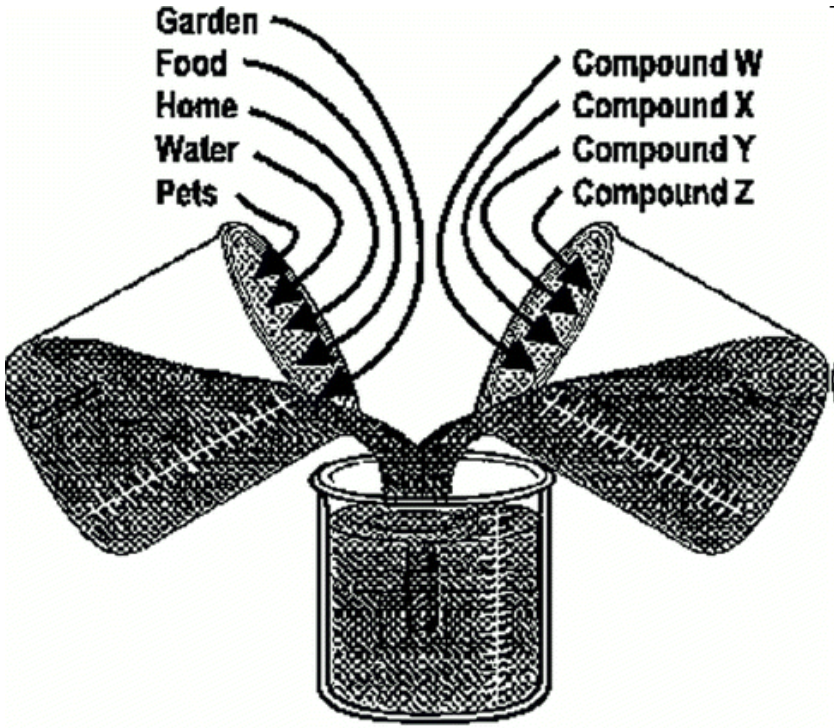
What does registration mean?

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

Risk assessment



Prior to 1996 FQPA



Aggregate and Cumulative Risk Cup

After 1996 FQPA

What are the benefits?

- Aesthetics

- Healthy saleable plants & produce

What are the benefits?

- Bountiful harvest

BROWNTAIL MOTH

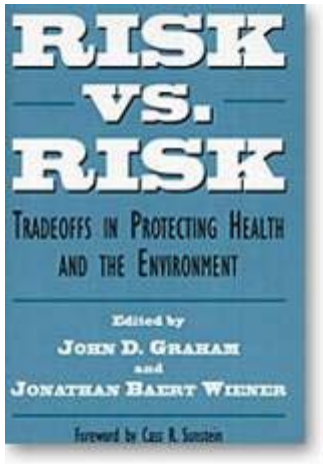
DEER TICK

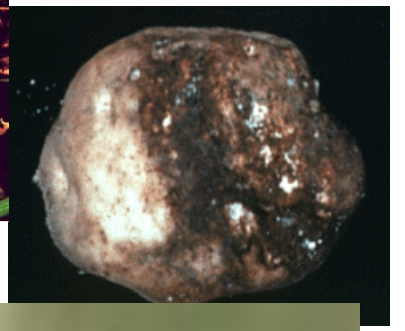
- Nuisance or public heath pest control

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

Risk vs. Risk

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





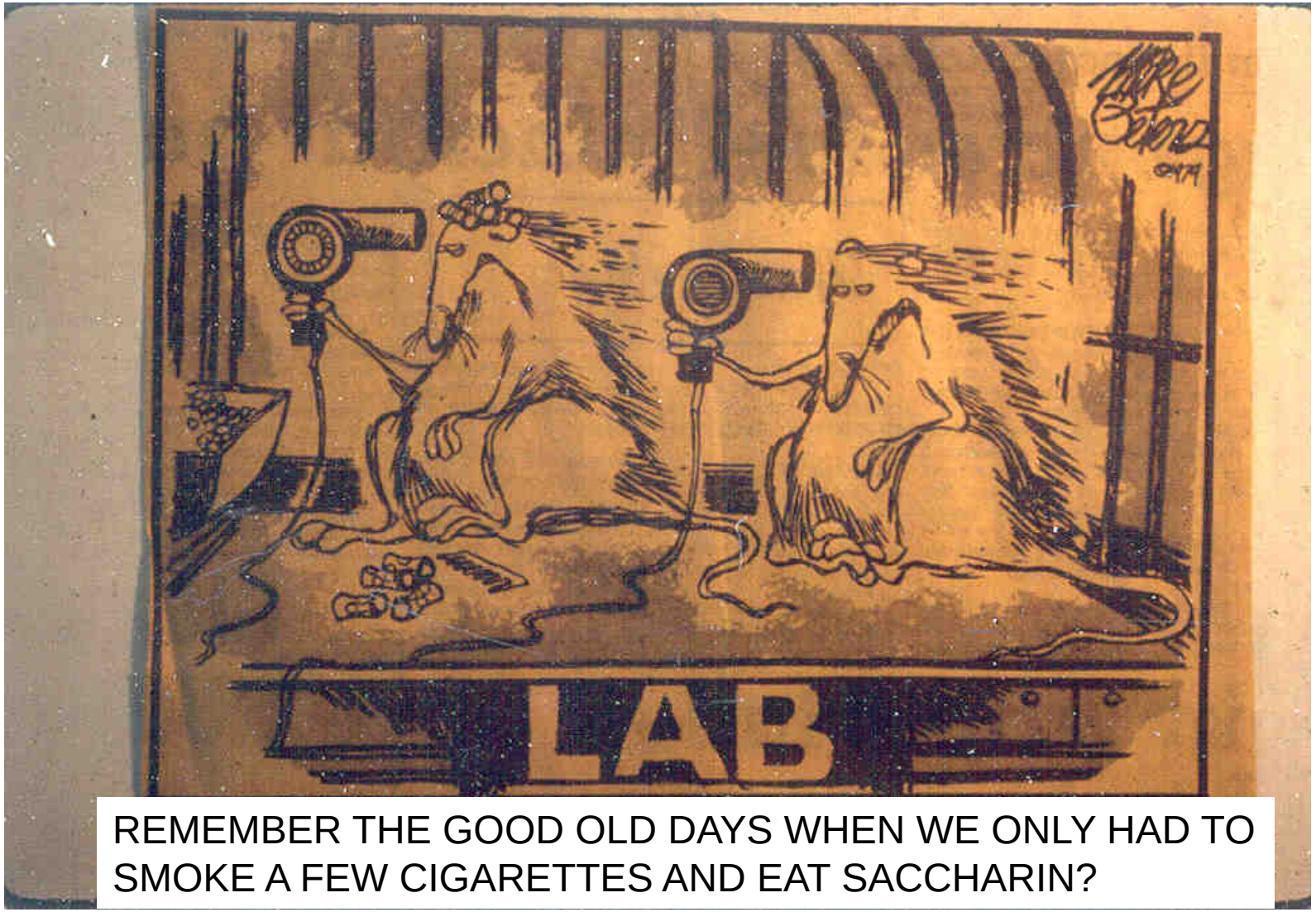
Courtesy of
Kevin Byron

What are the human risks?

- Acute
  - Rash
  - Nausea
  - Eye ticks
  - Stomach cramps
  - Death

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

How are the risks determined?



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

All pesticides have risks!!!

- Organic ≠ Safe
- Synthetic ≠ Highly toxic
- Natural ≠ Safe

No endorsement intended or implied

Even natural or organic products are toxic!

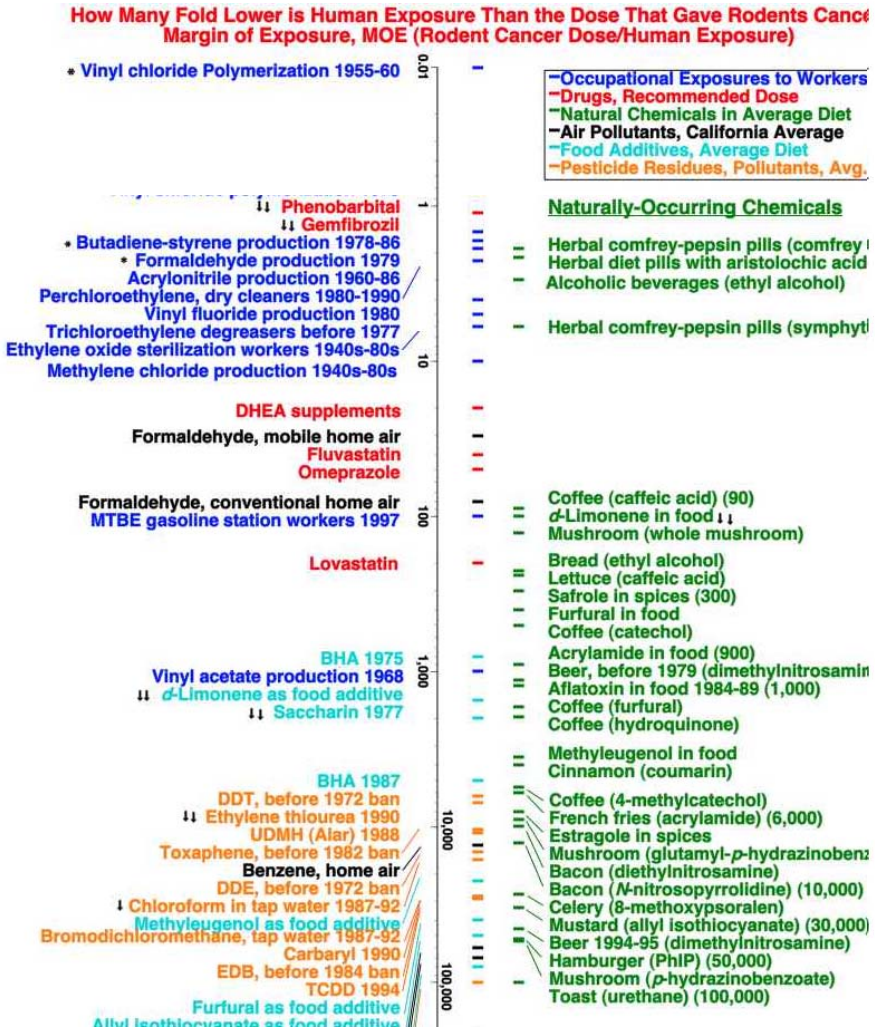


TABLE 2-12 Original chart from Pests of the Garden and Small Farm by Mary Louise Flint Amended by Gary Fish September 2007

Oral LD_{50} 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
*Bacillus thuringiensis**	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.

[a]LD_{50} 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.

[b]EIC 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.

[1]Estimated EIQ.

"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

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

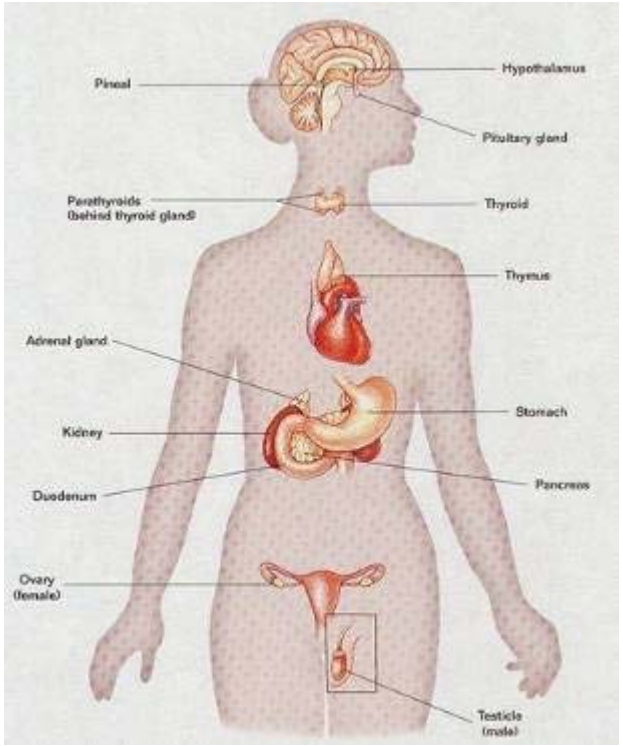
Woman in water drinking contest dies

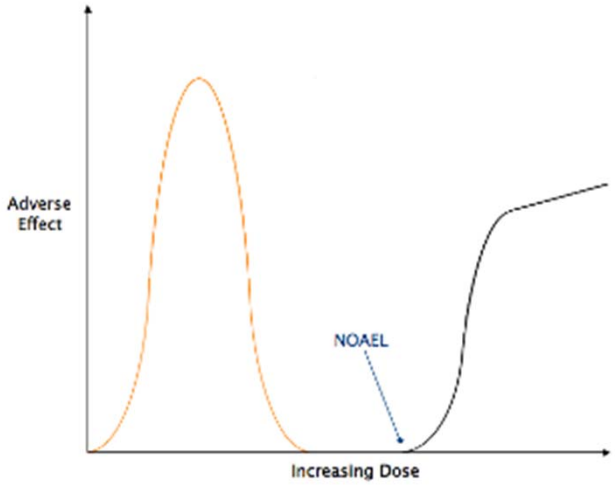
Jan. 15: Sacramento Bee reporter Christina Jewett talks to MSNBC-TV's Contessa Brewer about the death of a woman who had competed in a radio station contest.

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





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No endorsement intended or implied

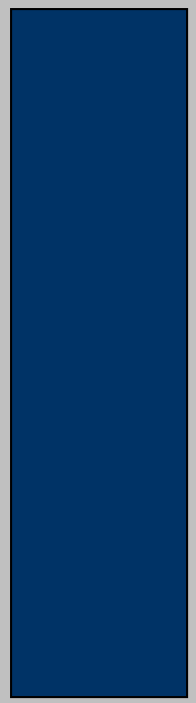
One way to quickly assess the risk?

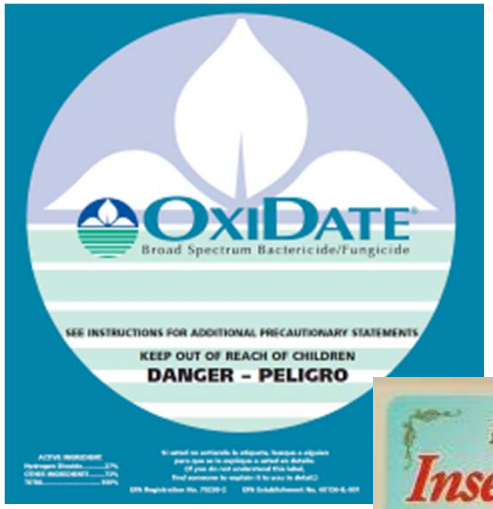
Signal Words

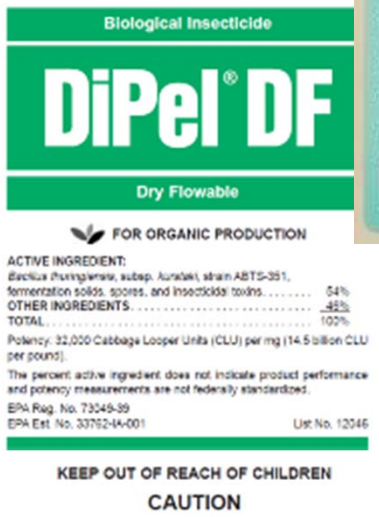
Danger

Warning

Caution



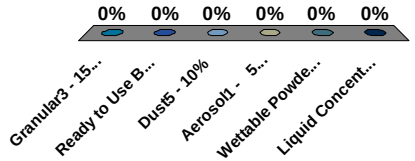




No endorsement intended or implied

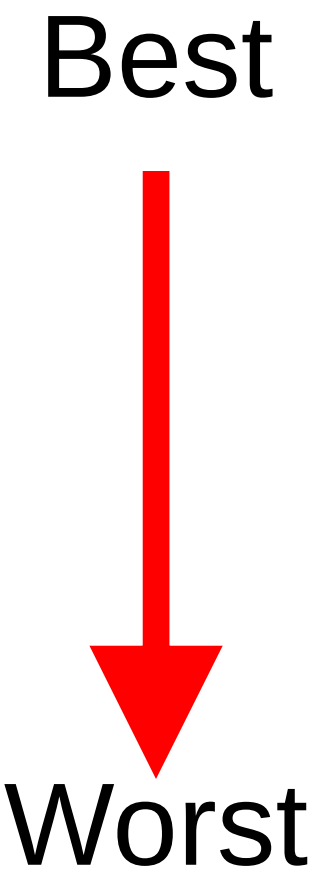
Please choose the two pesticide formulation types with the lowest exposure potential

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



Which product do you think is the better choice?

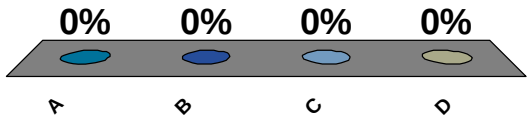
1. A

2. B →

3. C

4. D →

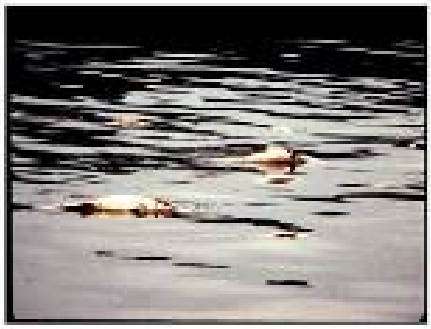
No endorsement intended or implied



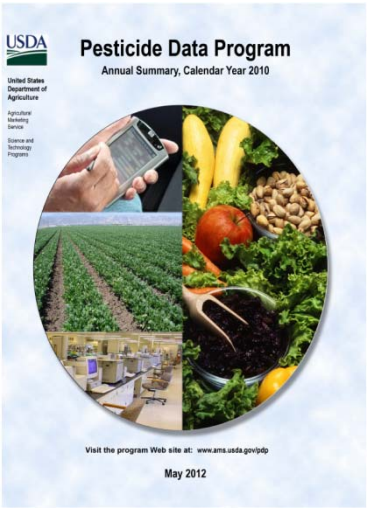
How is risk reduced?- PPE

What are some "environmental" risks?

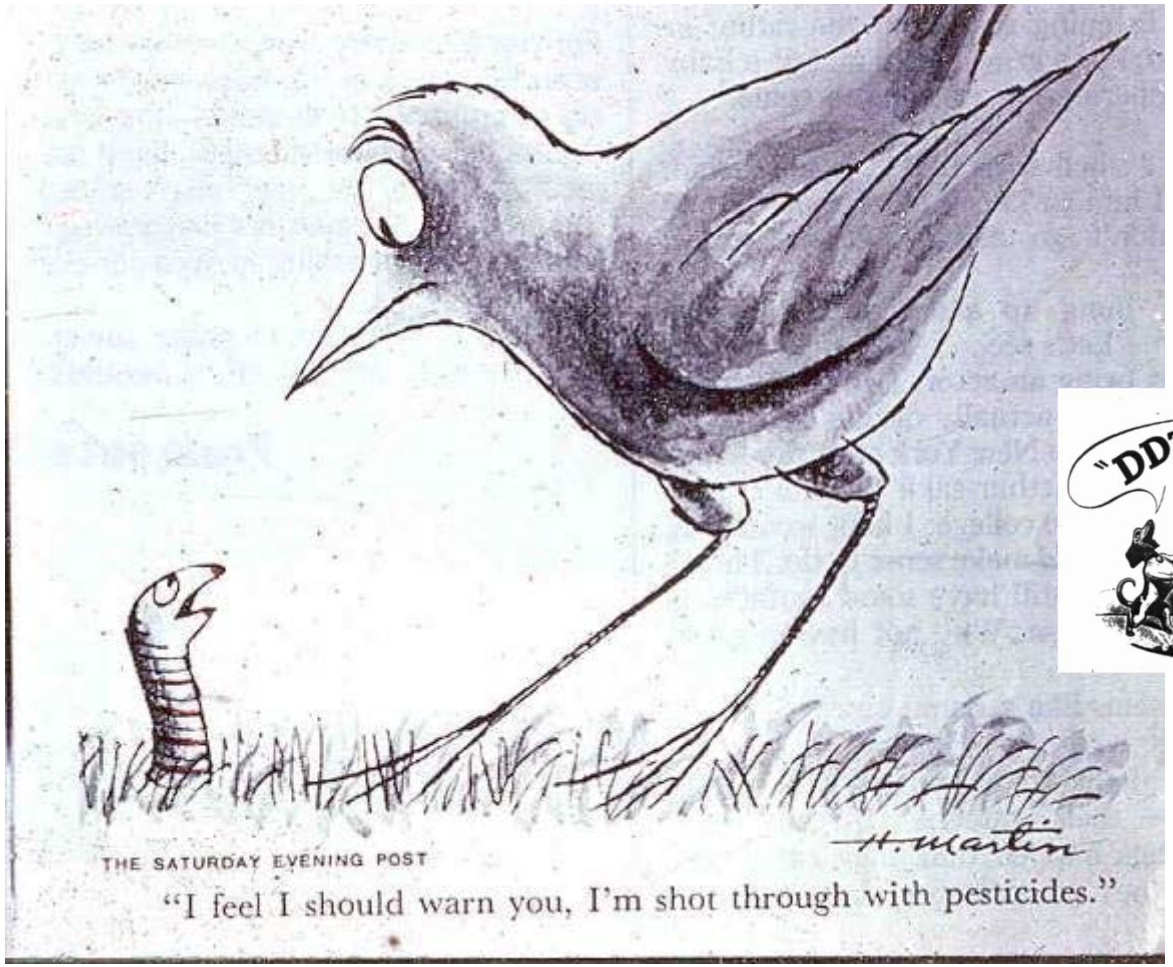
- Wildlife effects



- 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

http://www.extension.org/pages/24315/managed-pollinator-cap:-coordinated-agricultural-project

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			
Bacillus thuringiensis (Bt)			
Beauveria bassiana			
Cydia pomonella granulosis			
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

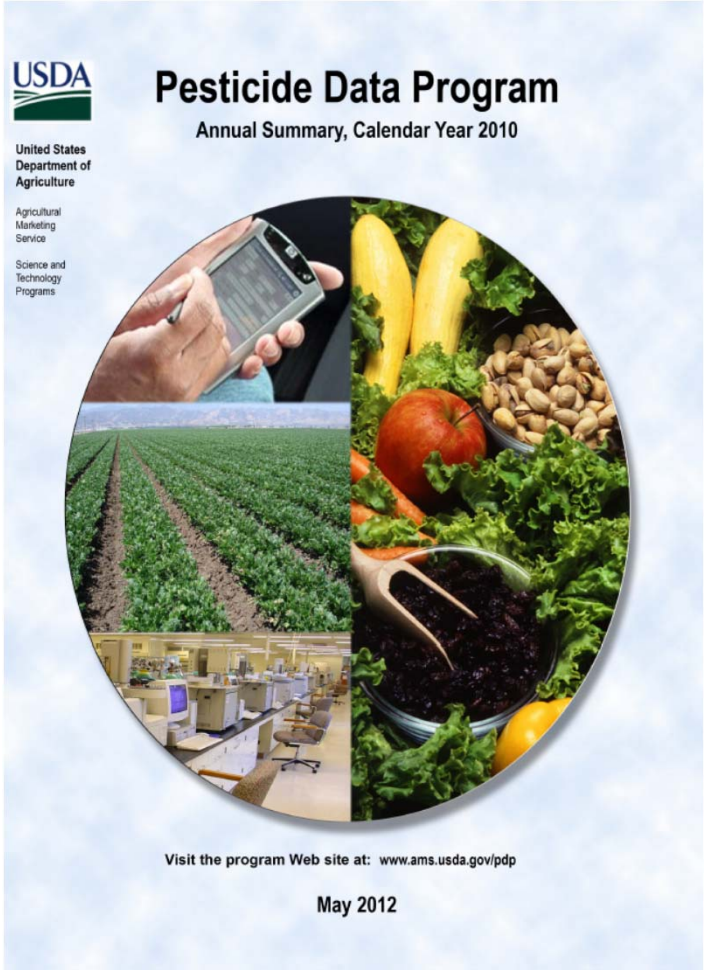
Eric Mader – The Xerces Society for Invertebrate Conservation

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



http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=stelprdc5098550

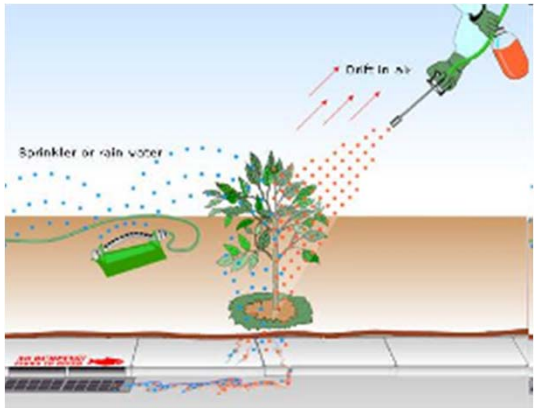
PDP also detects pesticide residues on organic produce

- **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

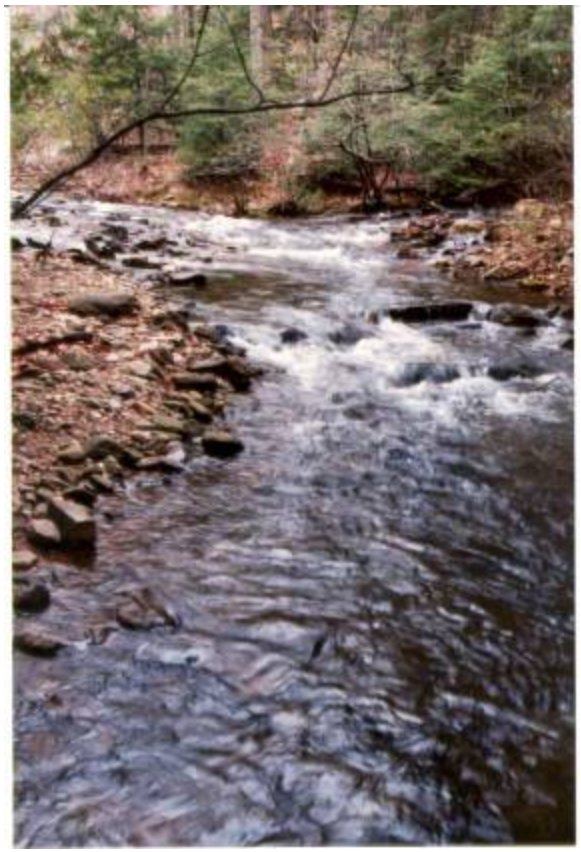
Commodity Group	Number of Samples Collected			Number of Samples with Positive Detections			Percent of Samples with Positive Detections			Detections Above a Health Advisory		
	1994	1999	2005	1994	1999	2005	1994	1999	2005	1994	1999	2005
Potatoes	47	100	87	8	4	1	17%	4%	1%	None	None	None
Corn	49	51	28	7	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
- Pesticide residues detected in sediments
  - Bifenthrin up to (37 ppb)
  - Permethrin up to (47 ppb)

**Values in red exceed Aquatic Life Criteria

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

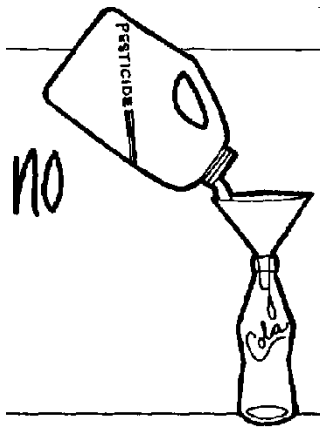
- Locate & stay away from wells
- Stay away from ledge
- Stay away from wetlands & water
- Do not apply to slopes near water
- Do not apply before heavy rains
- Spot applications
- Vegetative buffers

Storage

- Buy *only* what you need

- Keep them out of reach of children & lock them up

- Keep in original containers

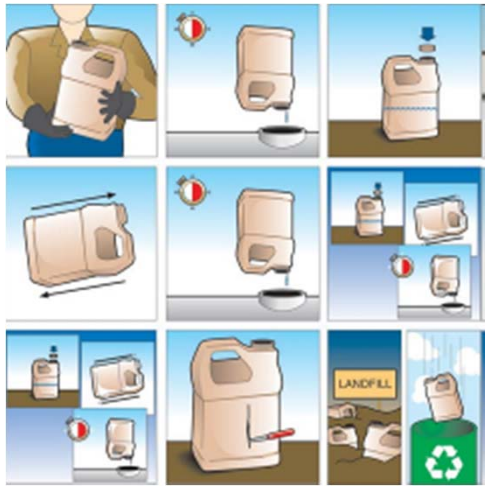


- Never store in basement!

Disposal

- Follow label
- Rinse containers
- Apply extra mix to labeled site
- Call BPC about obsolete pesticides

IMPORTANT- Directions for Storage and Disposal	
STORAGE	Store unused product in an area out of reach of children and animals. Do not store in areas where temperatures frequently exceed 100°F.
DISPOSAL	**If Empty:** • Do not reuse this container. • Place empty container in trash or offer for recycling if available. **If Partly Filled:** • Call your local solid waste agency or toll free 1-800-CLEANUP for disposal instructions. • Never place unused product down any indoor or outdoor drain.



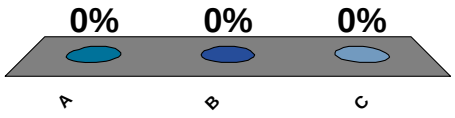
Based on signal word, which product is most risky to handle?

1. A

2. B

No endorsement intended or implied

3. C



Think First…. Spray Last

- "The quick fix is neither"!

Make the benefits

Outweigh the risks

1997 Legislative Mandate

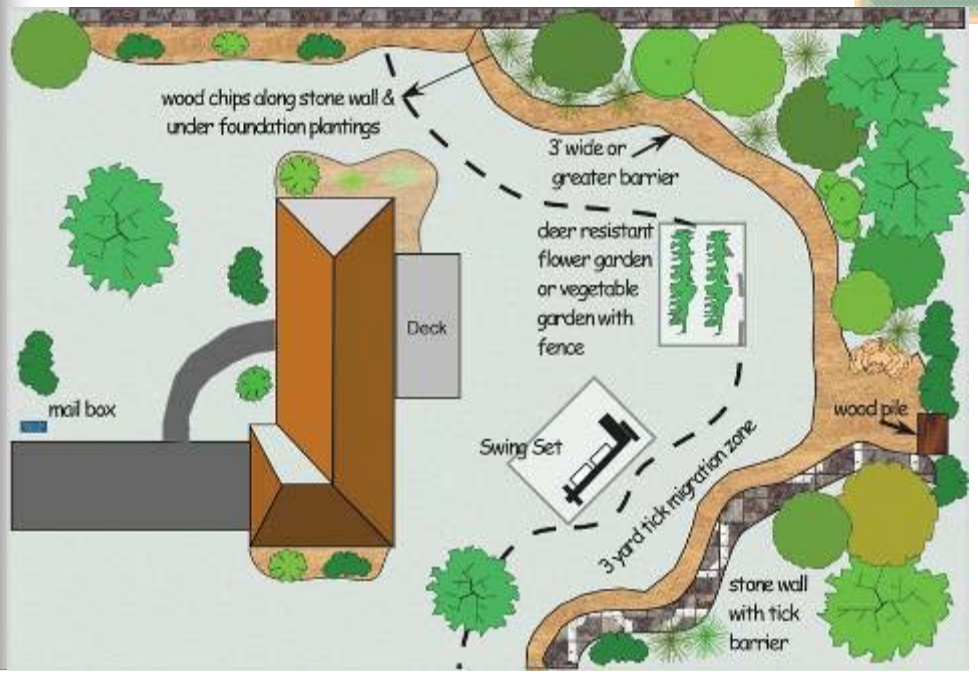
- It is the policy of the State to Minimize reliance on pesticides!

The Friends of Casco Bay
BAYSCAPER

MAINE YARDSCAPING

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??

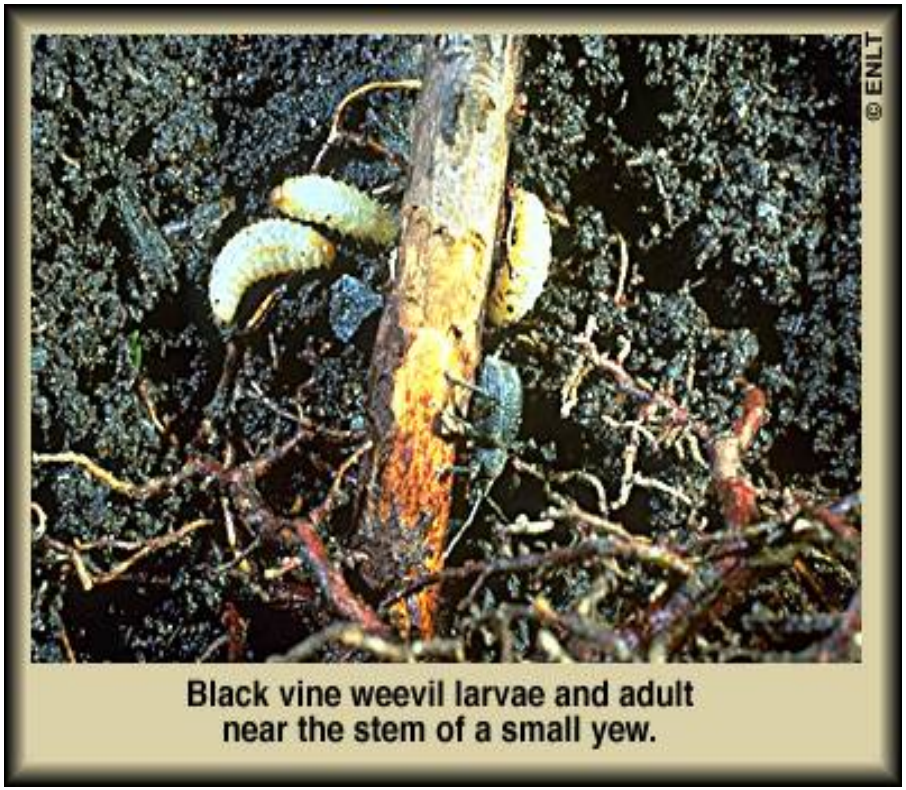
- Is it a pest problem?
  - Often what's normal for the plant is mistaken for a pest or disease
    - Variegation
    - Reproductive structures

Is this a disease?

Who’s been chewing here?

They only come out at night.

The real culprit!



Black vine weevil larvae and adult near the stem of a small yew.

“The gardener’s best buddies”

Japanese Beetle

- Select non-preferred shrubs and trees (avoid linden, roses, crabapples, grapes, raspberries)
- Cover susceptible plants with protective netting
- Avoid traps
- Use a trap plant (soybean, zinnia, pole beans, etc.)

Kentucky wonder pole beans

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.

Viburnum Leaf Beetle

- Plant resistant cultivars
  (www.hort.cornell.edu/vlb/suscept.html)
  - **Some 'resistant' cultivars:**
    - *V. cassinoides or nudum, 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

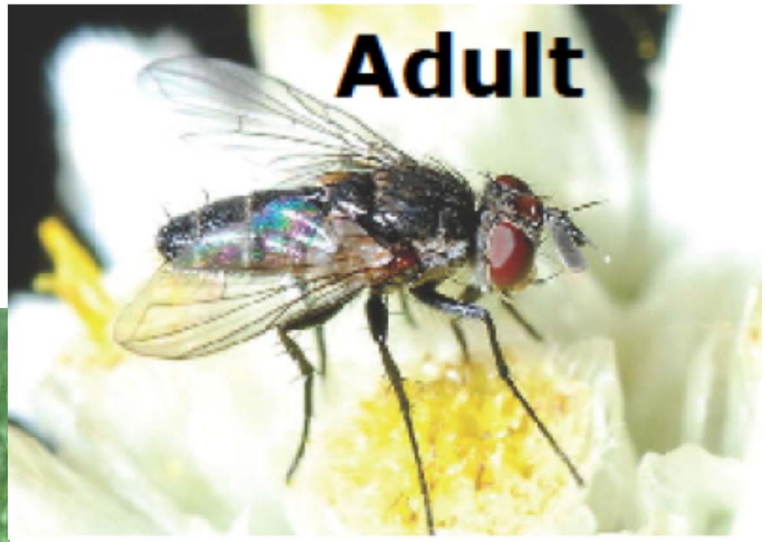
- **Plant health and cultural requirements**
  - **fertilization: over fertilization (the "aphid effect")**
    - **Overfertilizing may help the pest more than the plant**
  - **water management: proper irrigation**
  - **planting site: choose the right plant for the site**
  - **mulching: pull mulch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

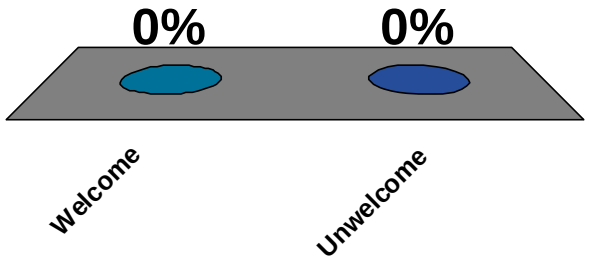
Mechanical controls

- 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

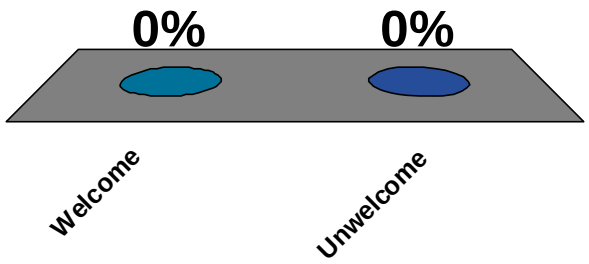
- **Lay up 100 eggs in two weeks**
- **Eggs hatch 1 day later, dig into beetle**
- **Kills beetle in 5-6 days**
- **Just before death, beetle digs into ground where fly spend winter as pupa**

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?

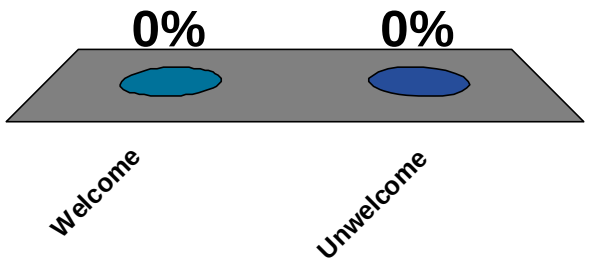
1. Welcome
2. Unwelcome



Good bug in action

Welcome or Unwelcome?

1. Welcome
2. Unwelcome



Flower fly larvae eat aphids!

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

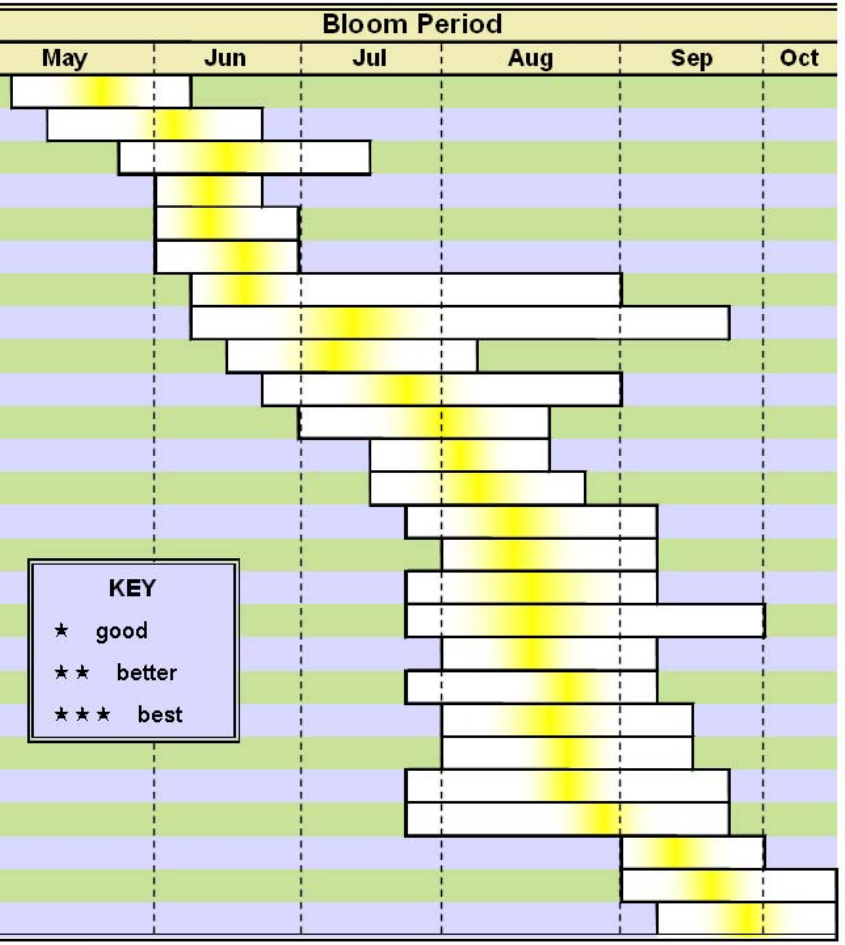
Many beneficials, as adults, larvae, or both, require pollen and/or nectar as dietary supplements

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
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	★★	★★



MICHIGAN STATE UNIVERSITY

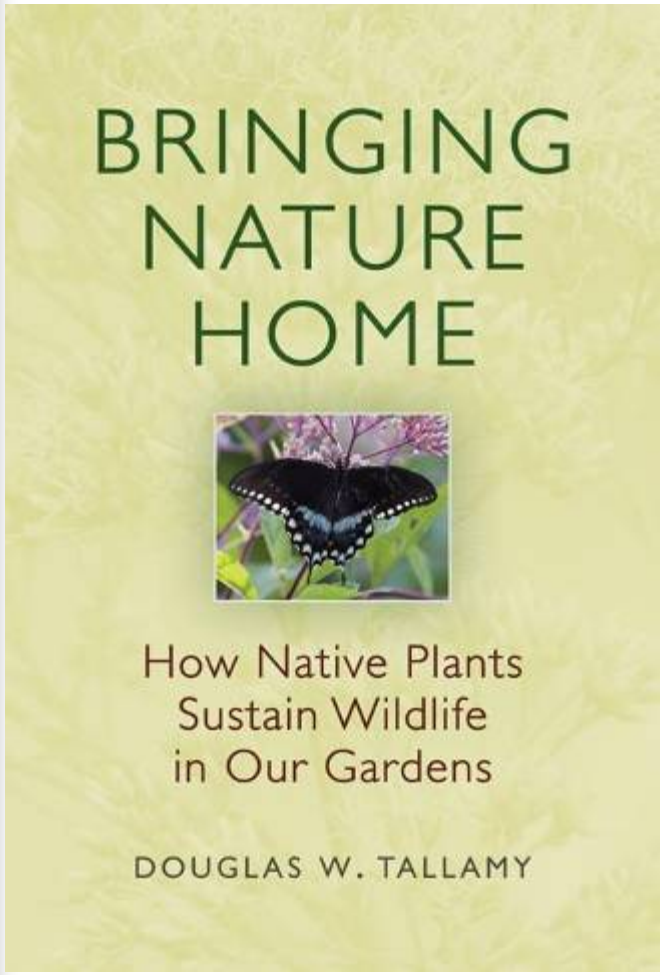
Project GREEEN

Charles Stewart MOTT FOUNDATION

North Central Region SARE
Sustainable Agriculture Research and Education

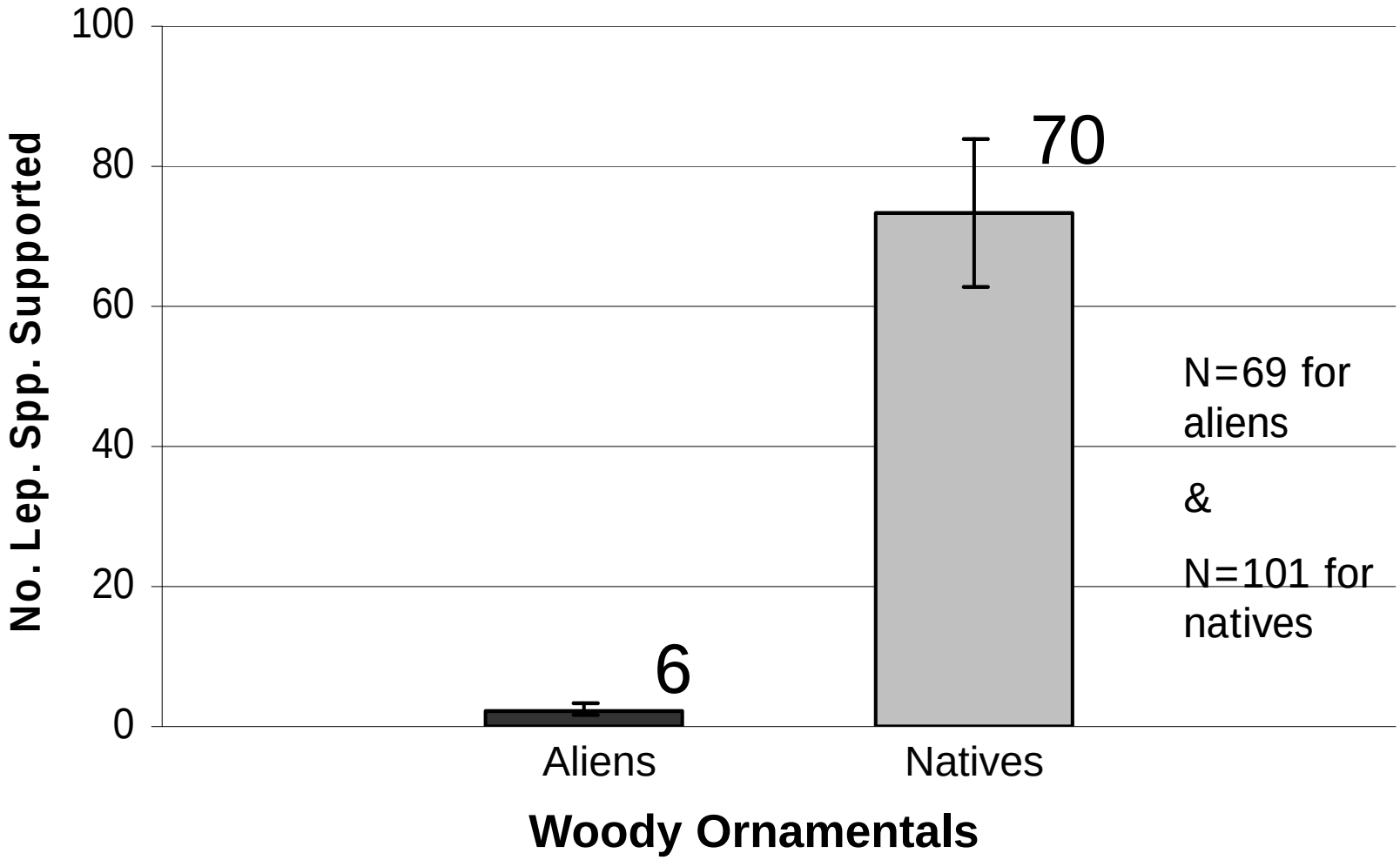
Pretty ornamentals? Or Pests?

Birds can also be our allies



http://www.bringingnaturehome.net/

On average natives support 12x more lepidopteran species

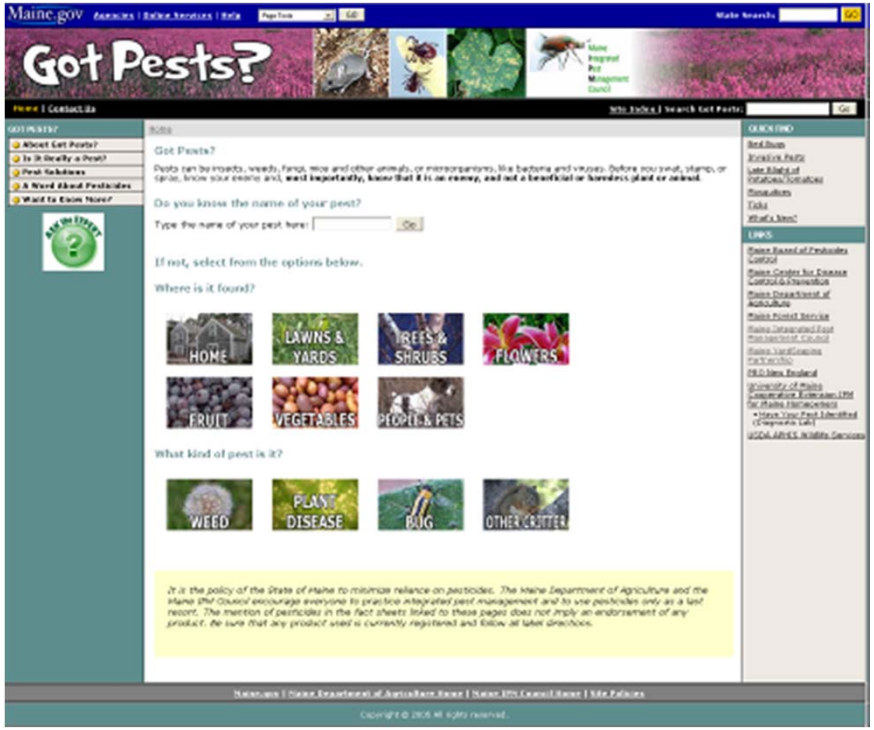


Who you gonna call?

BPC Web Pages

www.gotpests.org

www.thinkfirstspraylast.org



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

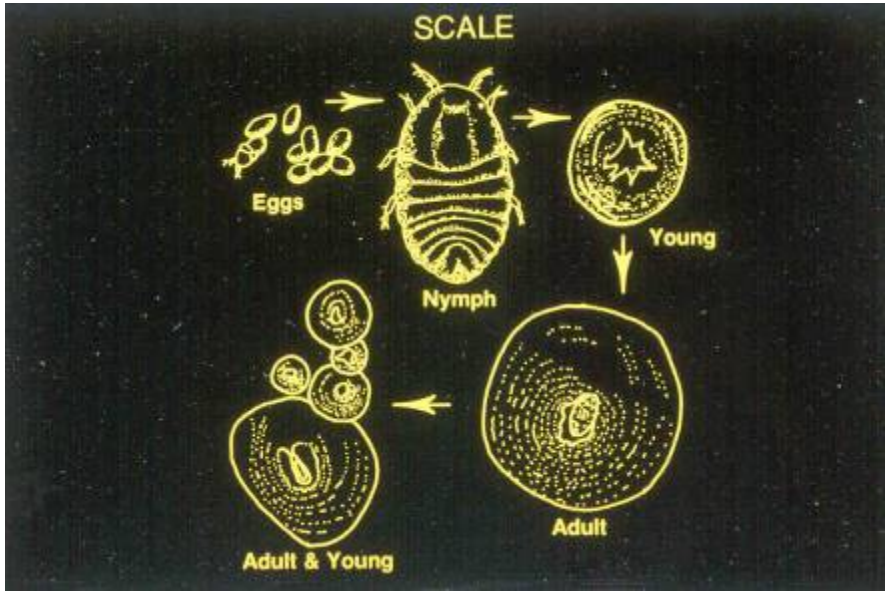
Birch leafminer

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


Colorado potato beetle


Lace bugs

Timing is everything?



Nobody home!

Eriophyid gall mite

Oak apple gall wasp

The key to proper use

- Read the label!

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.

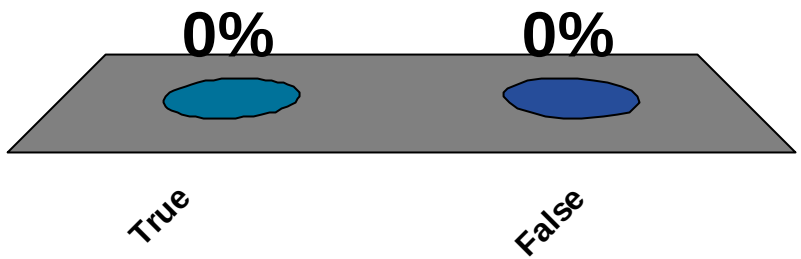
PHYSICAL OR CHEMICAL HAZARDS: Flammable. Keep away from heat and open flame.

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

Weed-B-Gon Max is a slightly hazardous pesticide.

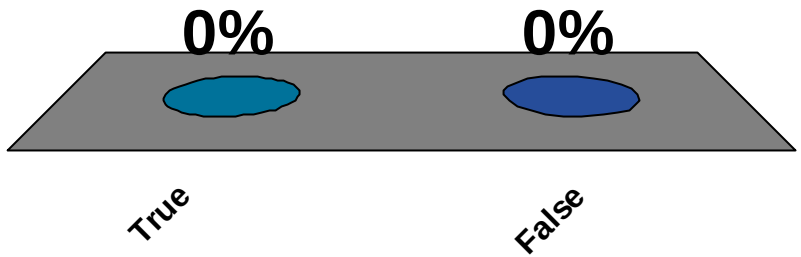
1. True
2. False



False – Warning = moderate hazard

Weed-B-Gon Max should be applied right after mowing.

1. True
2. False



False

Page 1

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read entire label before using this product. Use strictly in accordance with label precautionary statements and directions.

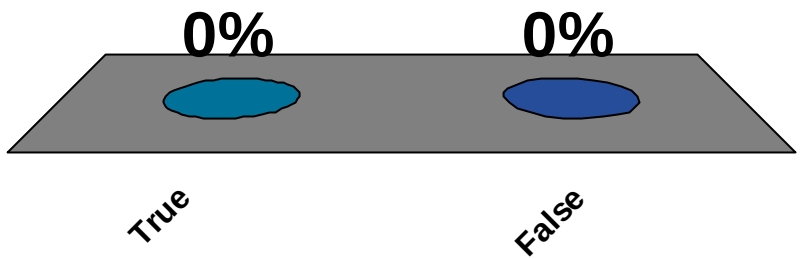
FOR BEST RESULTS

BEFORE YOU APPLY

- Do not mow for 1 to 2 days before or after application.
- If soil is dry, water before application.
- To treat the entire lawn (broadcast application): Use a tank sprayer or hose-end sprayer. Measure lawn. Calculate square feet by multiplying length times width. Spray evenly over measured area.

Weed-B-Gon Max can be applied under trees without risk of harm to the trees.

1. True
2. False



False

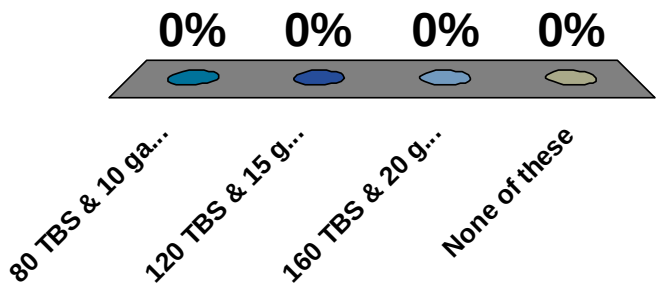
Page 2

IMPORTANT

- For use on Bluegrass, Fescues, Rye, Bent, Bermuda, Bahia and Zoysia lawns.
- DO NOT USE on St. Augustine and Centipede lawns.
- Do not spray Carpet grass, Dichondra or desirable clovers.
- May cause temporary yellowing of some Bermudagrass turf.
- Do not exceed specified dosages for any area.
- Be particularly careful applying within the drip line of trees and other ornamental species.
- Avoid contact with exposed feeder roots of ornamentals and trees.

How much Weed-B-Gon Max and how much water should you add to your sprayer if you need to treat a lawn that is 100 feet wide and 150 feet long?

1. 80 TBS & 10 gallons
2. 120 TBS & 15 gallons
3. 160 TBS & 20 gallons
4. None of these



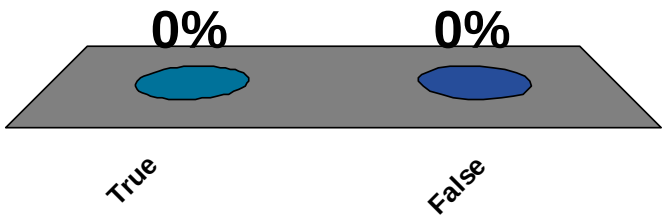
120 TBS OWBG & 15 G H2O

Page 1

MIXING INSTRUCTIONS 1 Tablespoon (Tbs) = 3 teaspoons (tsp) 1 fl oz = 2 Tbs	NORTHERN GRASSES: Fescues, Kentucky bluegrass, perennial rye and zoysia	SOUTHERN GRASSES: Bent, bahia and Bermuda (DO NOT USE on St. Augustine or centipede lawns)
WHEN USING A TANK SPRAYER	Add 4 fl. oz. per gallon of water for each 1,000 sq. ft.	Add 2 fl. oz. per gallon of water for each 1,000 sq. ft.
WHEN USING AN ORTHO® DIAL 'N SPRAY® APPLICATOR	• Set dial to 4 oz. • Add 8 oz. of concentrate directly into sprayer jar. DO NOT ADD WATER. • Spray evenly over 2,000 sq. ft. • Any unused product should be poured back into its original container.	• Set dial to 2 oz. • Add 8 oz. of concentrate directly into sprayer jar. DO NOT ADD WATER. • Spray evenly over 4,000 sq. ft. • Any unused product should be poured back into its original container.

This product is a good choice to use to remove dandelions just prior to planting new grass seed.

1. True
2. False



False

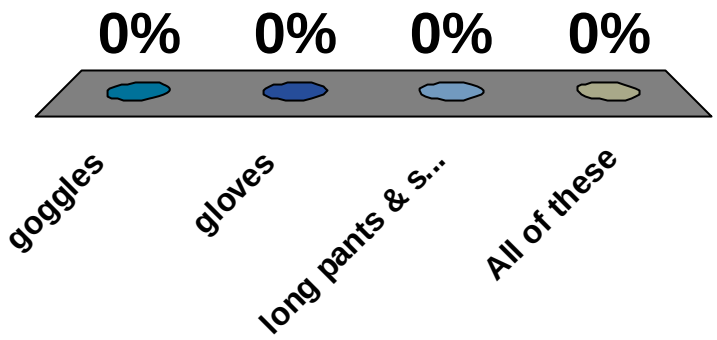
Page 1

WHEN TO APPLY

- Spray when weeds are actively growing.
- Spray when temperature is below 90°F.
- Spray when air is calm to avoid drift to vegetables, flowers, ornamental plants, trees, shrubs and other desirable plants.
- Do not apply to newly seeded grasses until well established (they have been mowed 3 times).
- Rain-Proof!™ BRAND — Rain or watering 1 hour after application will not wash away effectiveness.
- Reseed no sooner than 3 weeks after application.

What protective equipment must be worn when mixing Weed-B-Gon Max?

1. goggles
2. gloves
3. long pants & sleeves
4. All of these



Goggles must be worn… but

Page 3

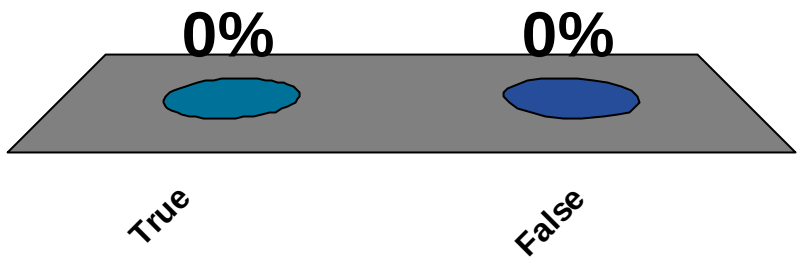
PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING:

- Causes substantial but temporary eye injury.
- Harmful if swallowed.
- Do not get in eyes, on skin or on clothing.
- Wear goggles, face shield or safety glasses when mixing, pouring this concentrate from one container to another and when removing or reattaching container closure/spray nozzle.
- After product has been diluted in accordance with Directions for Use, eye protection is not required.
- Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

If Weed-B-Gon Max is accidentally swallowed the victim should **NOT** be made to vomit.

1. True
2. False



True

Page 3

FIRST AID STATEMENT

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

IF IN EYES

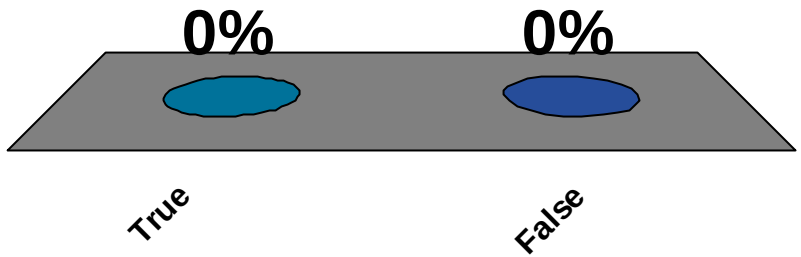
Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF SWALLOWED

Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow.
Do not induce vomiting unless told to do so by a poison control center or doctor.
Do not give anything by mouth to an unconscious person.

Weed-B-Gon Max can be used on any type of lawn.

1. True
2. False



False - despite what it says

IMPORTANT

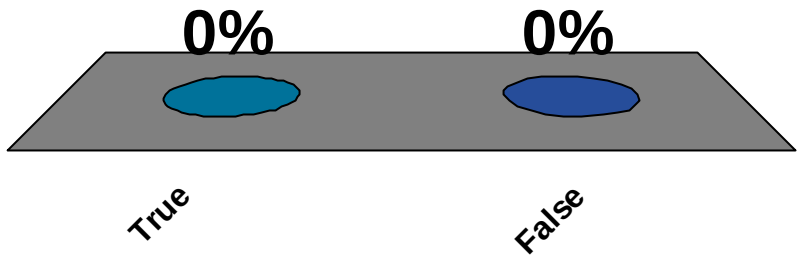
- For use on Bluegrass, Fescues, Rye, Bent, Bermuda, Bahia and Zoysia lawns.
- DO NOT USE on St. Augustine and Centipede lawns.
- Do not spray Carpet grass, Dichondra or desirable clovers.
- May cause temporary yellowing of some Bermudagrass turf.

PRODUCT FACT Treats up to 16,000 square feet

KILLS WEEDS	Kills over 250 weeds including: dandelion, chickweed, clover, ground ivy, (creeping Charlie), oxalis, wild violet & other tough lawn weeds.
WHERE TO USE	**ON LAWNS** Fescue, Kentucky bluegrass, perennial ryegrass, zoysiagrass, bentgrass, bahiagrass and Bermudagrass. DO NOT USE on St. Augustine or centipede lawns. For St. Augustine or centipede lawns use Weed-B-Gon Spot Weed Killer for St. Augustine Lawns or Weed-B-Gon MAX Ready-to-Use.

People and pets can re-enter the treated area after the spray has dried.

1. True
2. False

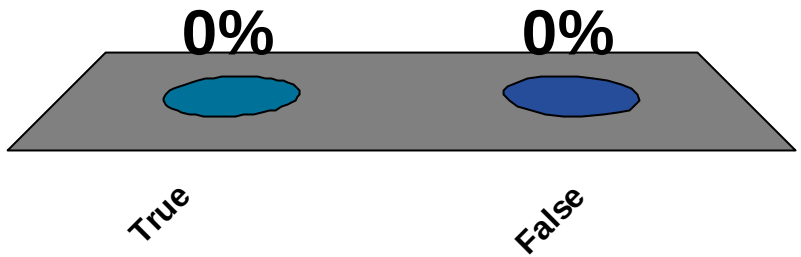


True

Do not allow people (other than applicator) or pets on treatment area during application. People & pets may enter treated area after spray has dried.

Weed-B-Gon Max can be applied to lawns right at the edge of lakes and streams.

1. True
2. False



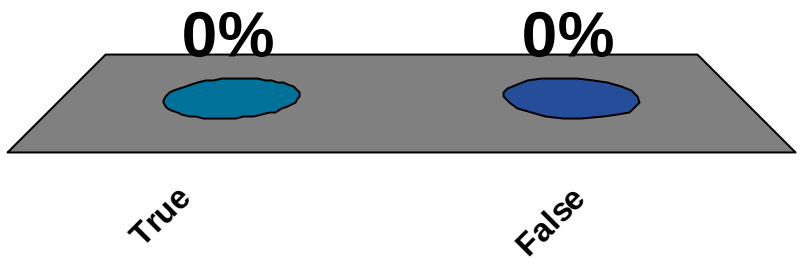
True – But?????

ENVIRONMENTAL HAZARDS

- Drift or runoff may adversely affect nontarget plants.
- Do not apply directly to water. When cleaning equipment, do not pour washwater on the ground; spray or drain over a large area away from wells and other water sources. Do not contaminate water when disposing of equipment washwaters.
- Do not apply this product through any type of irrigation system. Do not contaminate water used for irrigation or domestic purposes.
- Most cases of ground water contamination involving phenoxy herbicides such as MCPA have been associated with mixing/loading and disposal sites. Caution should be exercised when handling these phenoxy pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing and transferring this pesticide will reduce the probability of spills.
- Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

Weed-B-Gon Max will control crabgrass and quackgrass.

1. True
2. False



False – Broadleaf plants only

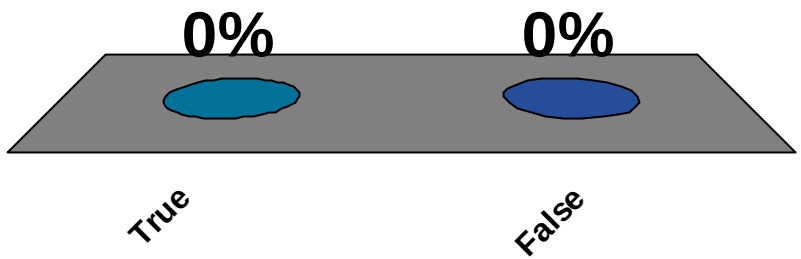
WEEDS

Alder, Annual yellow sweet clover, Artichoke, Aster, Austrian fieldcress, Bedstraw, Beggartick, Biden, Bindweed, Bird vetch, Bitterweed, Bitter wintercress, Black-eyed Susan, Black medic, Black mustard, Blackseed pantain, Blessed thistle, Blue lettuce, Blue vervain, Box elder, Bracted plantain, Brassbuttons, Bristly oxtongue, Broadleaf dock, Broadleaf plantain, Broomweed, Buckhorn, Buckhorn plantain, Bulbous buttercup, Bull nettle, Bull thistle, Burdock, Burning nettle, Bur ragweed, Burweed, Buttercup, Canada thistle, Carolina geranium, Carpetweed, Catchweed bedstraw, Catsear, Catnip, Chickweed, Chicory, Cinquefoil, Clover, Cockle, Cocklebur, Coffeebean, Coffeeweed, Common chickweed, Common mullein, Common sowthistle, Corn chamomile, Creeping jenny, Crimson clover, Croton, Cudweed, Curly

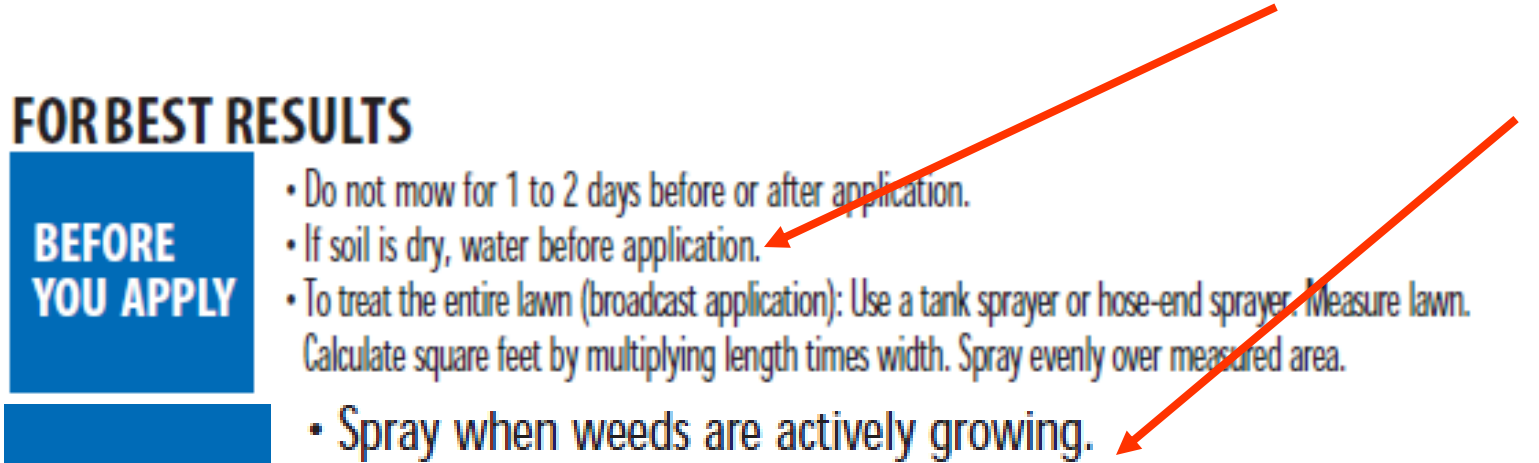
Peppergrass, Pepperweed, Pigweed, Pineywoods bedstraw, Plains coreopsis, Plantain, Poison hemlock, Poison ivy, Poison oak, Pokeweed, Poorjoe, Povertyweed, Prairie, Prickly lettuce, Prickly sida, Primrose, Prostrate knotweed, Prostrate pigweed, Prostrate spurge, Prostrate vervain, Puncture vine, Purslane, Ragweed, Red clover, Redroot pigweed, Red sorrel, Redstem filaree, Rough cinquefoil, Rough fleabane, Roundleafed marigold, Rush, Russian pigweed,

Weed-B-Gon Max works best on hot summer days when the weeds are dry and dying.

1. True
2. False



False



FOR BEST RESULTS

BEFORE YOU APPLY

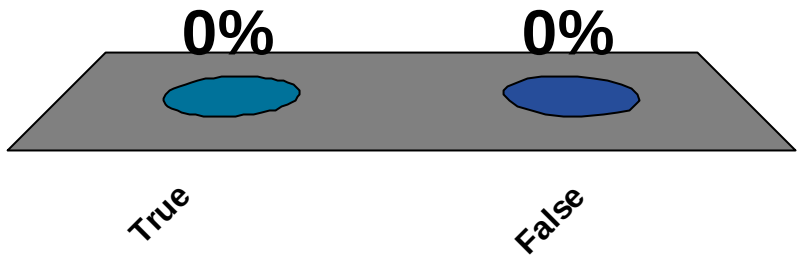
- Do not mow for 1 to 2 days before or after application.
- If soil is dry, water before application.
- To treat the entire lawn (broadcast application): Use a tank sprayer or hose-end sprayer. Measure lawn. Calculate square feet by multiplying length times width. Spray evenly over measured area.

WHEN TO APPLY

- Spray when weeds are actively growing.
- Spray when temperature is below 90°F.
- Spray when air is calm to avoid drift to vegetables, flowers, ornamental plants, trees, shrubs and other desirable plants.
- Do not apply to newly seeded grasses until well established (they have been mowed 3 times).
- Rain-Proof!™ BRAND — Rain or watering 1 hour after application will not wash away effectiveness.
- Reseed no sooner than 3 weeks after application.

Weed-B-Gon Max can be applied right next to vegetable gardens.

1. True
2. False



True – But???

WHEN TO APPLY

- Spray when weeds are actively growing.
- Spray when temperature is below 90°F.
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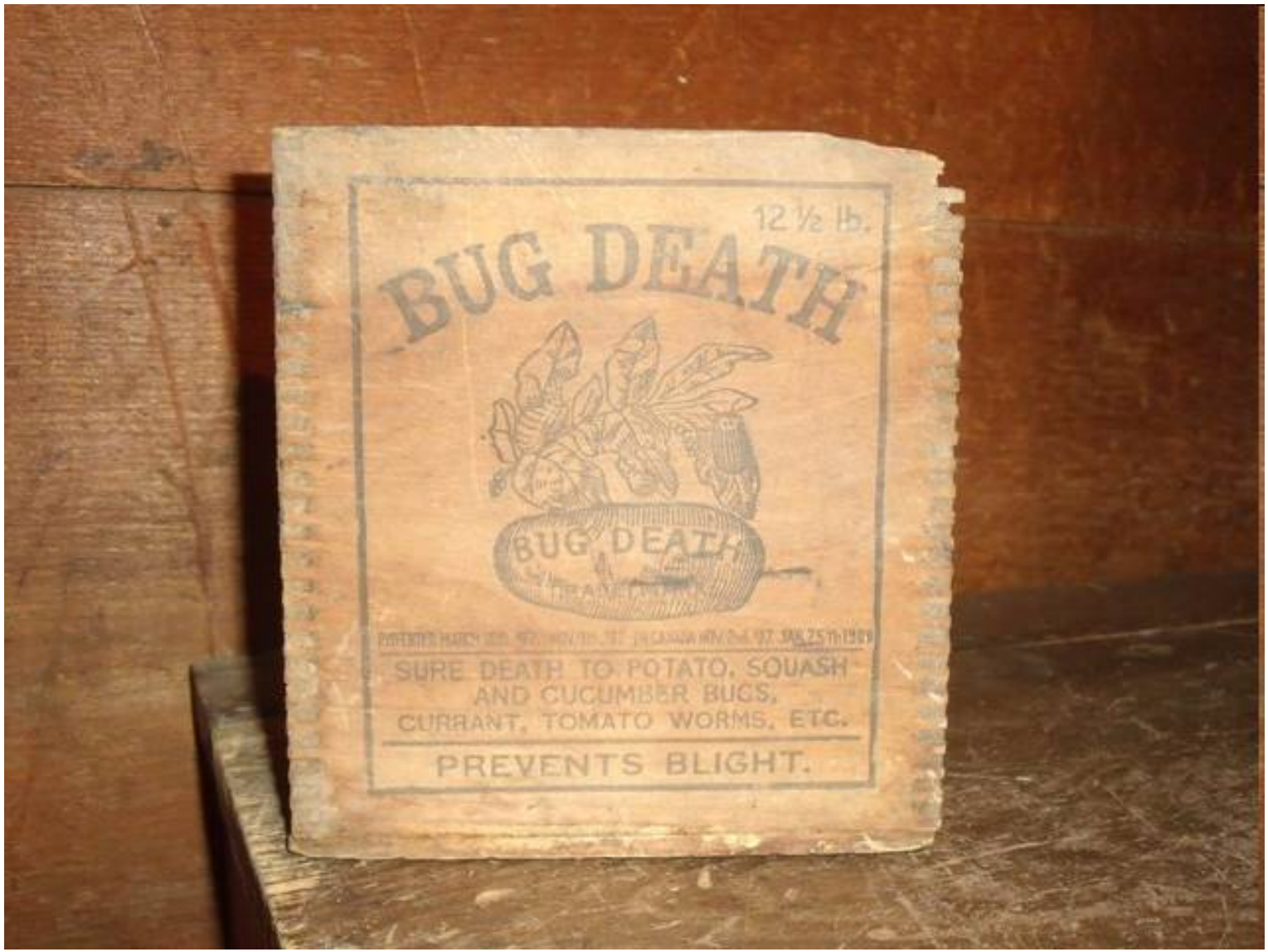
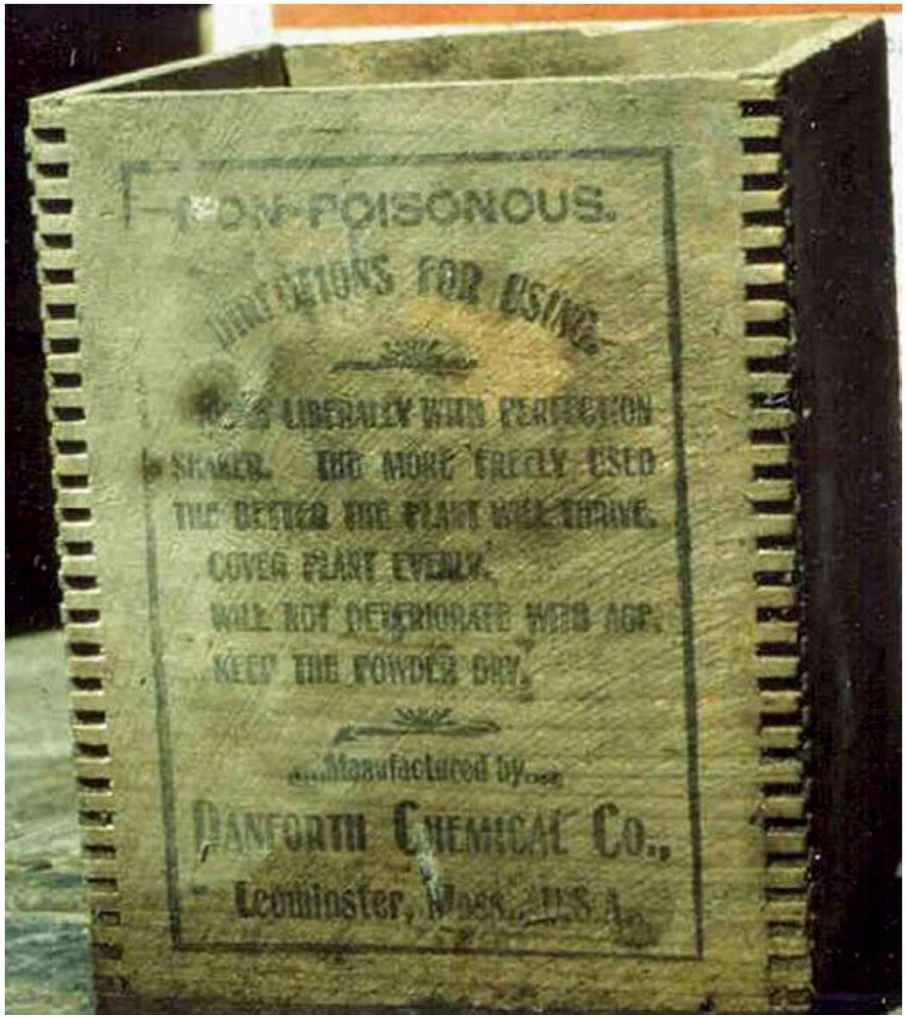
- Reseed no sooner than 3 weeks after application.

The old days


12 ½ lb.
BUG DEATH
BUG DEATH
SURE DEATH TO POTATO, SQUASH
AND CUCUMBER BUGS,
CURRANT, TOMATO WORMS, ETC.
PREVENTS BLIGHT.

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

BUG-B-GON® ORTHO® MAX®

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-digit UPC (non-processed) For Position Only

0 71549 01703 3

5-26-05 1040

ITFXXXXXX

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, spittlebugs, 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, chinch bug, Colorado potato beetle, corn earworm, corn rootworm (adults), cowpea curculio, cucumber beetle (adults – spotted & striped), cutworm, diamondback moth, European corn borer, fleabeetle, 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, rindworm, 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.

Manufactured for **The ORTHO Group** P.O. BOX 190 Marysville, OH 43040 Form LBXXXXXXXXX

EPA Reg. No. 1021-1582-239 EPA Est. 239-1A-3, 58996-MO-1A Superscript is first letter of lot number **Made in USA**

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.

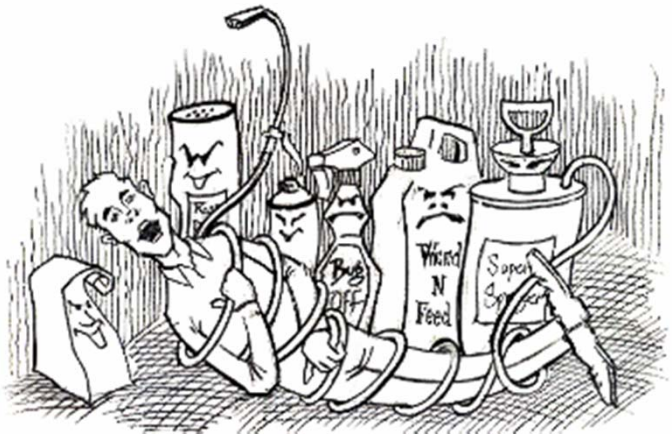
People and pets may enter treated area after spray has dried.

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

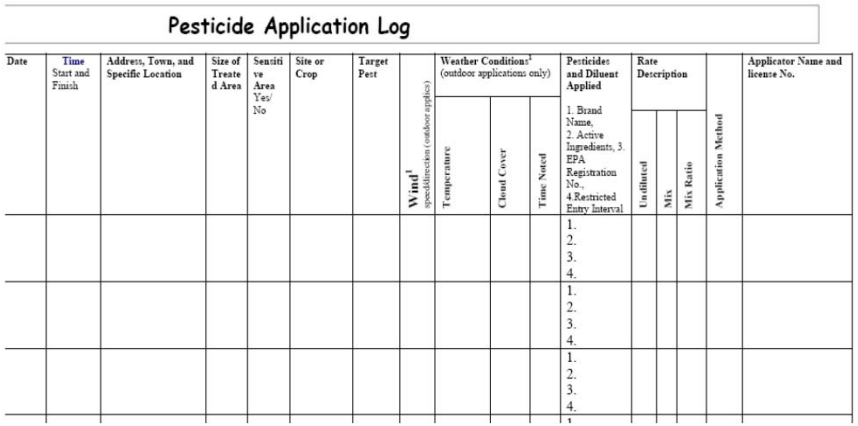
If you must apply a pesticide

- 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

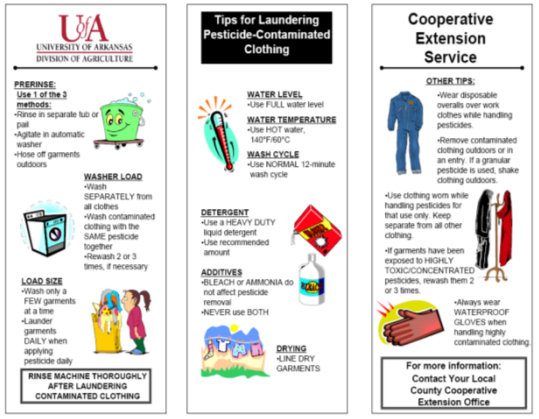


Pesticide Application Log

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] speed/direction (outdoor applics)	Weather Conditions[1] (outdoor applications only)			Pesticides and Diluent Applied	Rate Description			Application Method	Applicator Name and license No.
								Temperature	Cloud Cover	Time Noted	1. Brand Name, 2. Active Ingredients, 3. EPA Registration No., 4.Restricted Entry Interval	Undiluted	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



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

MAINE YARDSCAPING

think blue

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.

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)

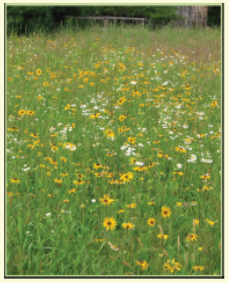
YardScaping Gardens
at Back Cove

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

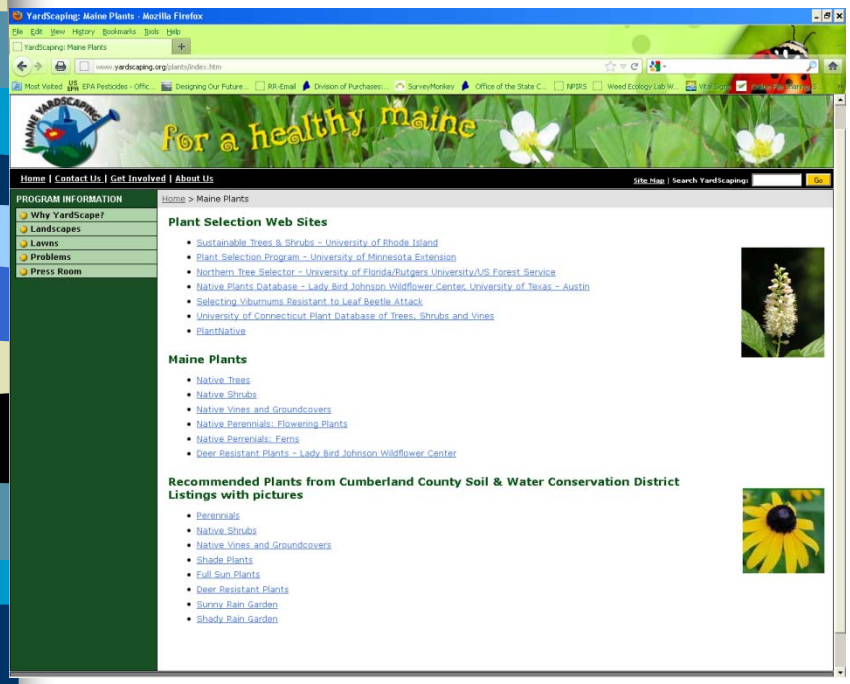
Oriental Bittersweet

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

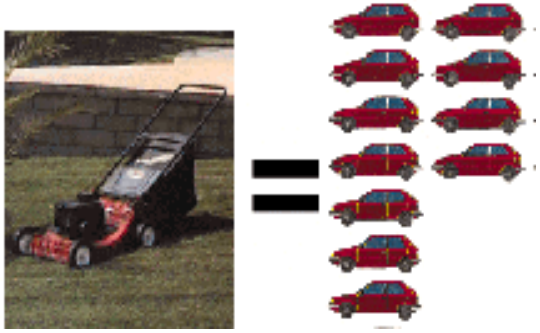
- Less noticeable damage from pests and disease
- Incorporate many layers of plant types
  - Trees
  - Shrubs
  - Ground covers
  - Perennials, and
  - Lawns

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

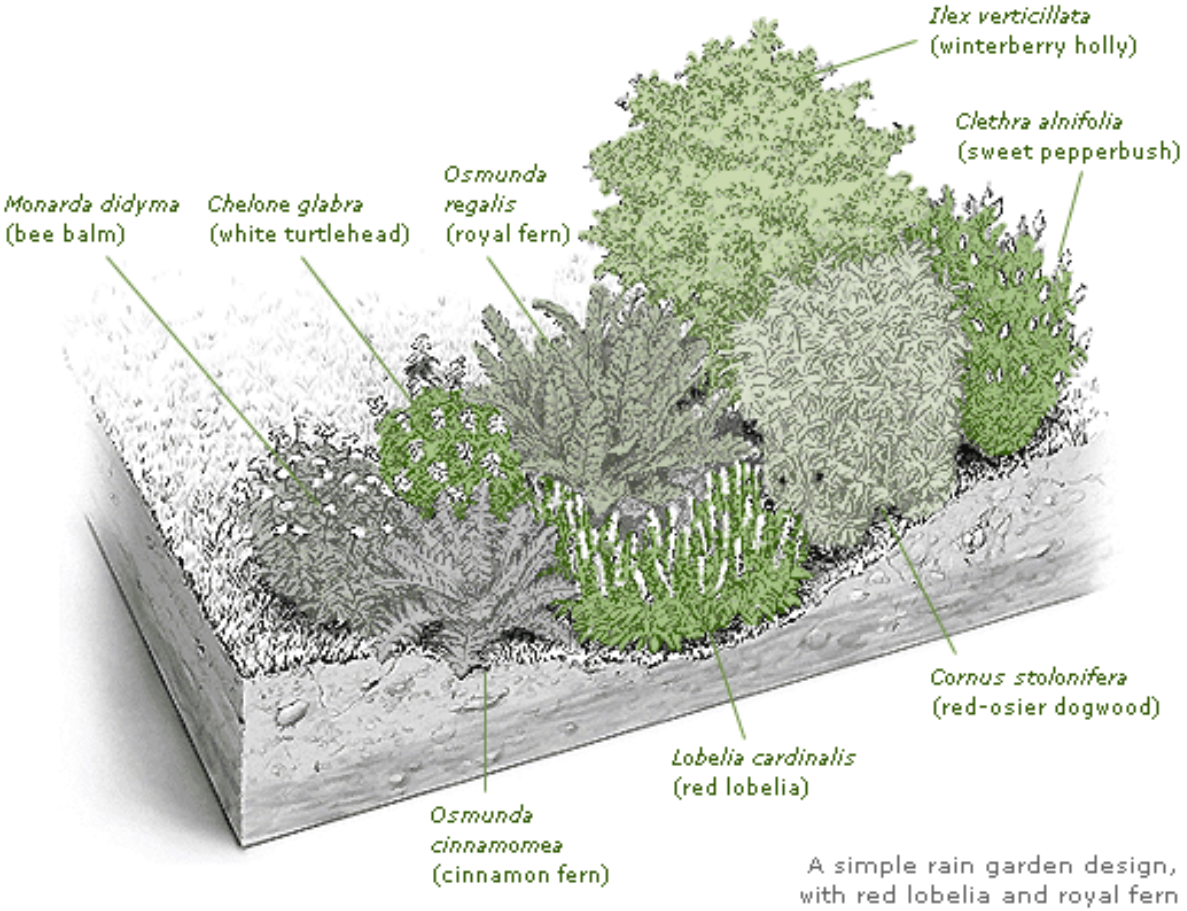
- No-mow fescue vs Kentucky bluegrass
- Pagoda dogwood vs flowering cherry
- River birch vs paper birch

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



A simple rain garden design, with red lobelia and royal fern occupying the lowest, wettest zone.

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

www.thinkfirstspraylast.org

Firefox | YardScaping: Home Page

www.yardscaping.org

maine state purchasing contracts nrsc

Maine.gov | Agencies | Online Services | Help | Page Tools | GO | State Search: | GO

for a healthy maine

Home | Contact Us | Get Involved | About Us | Site Map | Search YardScaping: | Go

PROGRAM INFORMATION

- Why YardScape?
- Landscapes
- Lawns
- Problems
- Press Room

Welcome to YardScaping

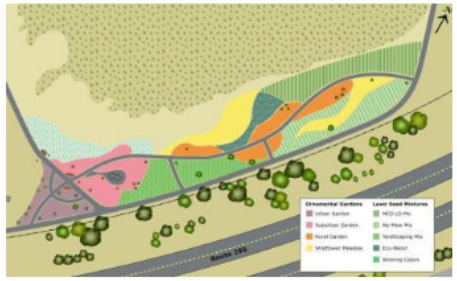
Can anything be more satisfying than a fertile carpet of green grass? How about a healthy landscape that features less lawn and beautiful plantings—all grown without the excessive use of pesticides, fertilizers, and water!

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

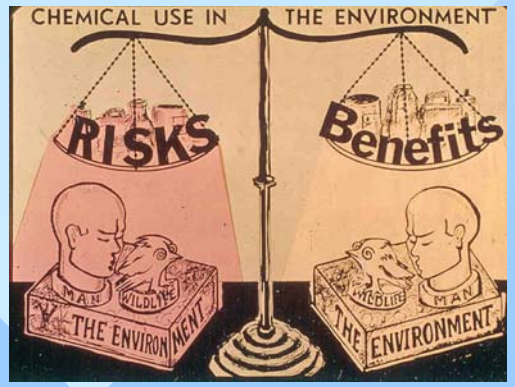
Maine.gov | Department of Ag| Board of Pesticides Control | Site Policies

Find: contra | Next | Previous | Highlight all | Match case

www.yardscaping.org

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