Pesticide labeling

- Most important source of information
- The label is the Law
- Read the label
 - before you buy/sell the product
 - before you use the product
 - before you dispose of the product



Common vs. trade names

- Trade name is a proprietary name used by a company (e.g., Sevin[®])
- Common name is the generic name for the pesticide (e.g., carbaryl)
- Extension publications use common names
- The public looks for trade names : (



Label exercise







Parts of a Label

- Trade name
- Chemical name
- Common name
- Formulation type
- Allowed sites



12 Month Tree & Shrub Insect Control CONCENTRATE

This product provides 12-Month systemic protection against damaging insects including Leafminers, Beetles, and Borers. Having beautiful trees and shrubs has never been easier.

PRECAUTIONARY STATEMENTS

CAUTION Hazards to Humans and Domestic Animals

- Causes moderate eye irritation.
- Avoid contact with skin, eyes or dothing.
- Wash thoroughly with soap and water after handling.

FIRST AID +

IN CASE OF ACCIDENTAL	ASE OF DENTAL IMMEDIATELY									
 Call a poison control center or doctor immediately for treatment advice. SWALLOWING 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. 										
CONTACT WITH 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. 									
NOTE: When calling poison control center, have this product label accessible. If seeking treatment at an emergency room or doctor's office, bring this product label to show medical personnel. You may call toll-free 877-229-3763 for medical emergency information. Active Ingredient: 1.47% Imidacloprid (CAS # 138261-41-3).										
ENVIRONMENTAL HAZARDS										
 This pesticide is toxic to aquatic invertebrates. Do not apply directly to lakes, streams, rivers or ponds. Do not dump rinse water into sewers or other bodies of water. Apply this product only as specified on this label. 										
NOTICE: Pacearch and testing have determined that the 'Directions For Lice' are										

NOTICE: Research and testing have determined that the 'Directions For Use' are appropriate for the proper use of this product under expected conditions. The Buyer assumes responsibility for lack of performance or safety if not used according to the directions.

Money Back Guarantee: If you are not satisfied with this product, we will gladly refund your original purchase price.

©2006 Bayer CropScience LP Bayer Advanced ABusiness Unit of Bayer CropScience LP P.O. Box 12014, 2 T.W. Alexander Drive Research Triangle Park, NC 27709 EPA. Reg. No. 72155-55 EPA. Est. No inclicated by 2nd and 3rd digits of the batch number on this package. (01) = 3125-W0-1 (63) = 432-TX-1 (68) = 67572-GA-1 (39) = 58996-MO-1 (49) = 072155-AL-001

Made in USA

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Parts of a Label

- Precautionary statement
- First aid
- Environmental statement
- EPA Registration number
- Directions for use
- Disposal instructions



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PRESS TO RESEAL



DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For best results, read and follow all label directions. BEFORE Do not apply near lakes, streams, rivers, or ponds. Do not apply to soils which are water-logged YOU USE or saturated. Read and Bucket or measuring utensils should not be used for follow these any food or drinking water purposes after use with directions when usina: this product. Determine the amount to use by measuring the distance around the tree trunk or height of the shrub. HOW Pour the required amount into a bucket of water and TO USE empty the bucket around the base of the tree/shrub. Outdoor trees and shrubs including listed fruit and nut trees: FOR Apple Mavhaw Pecan USE ON Crabapple Oriental Pear Ouince Loguat Pear

CONTROLS

Adelgids Aphids Roundheaded Borers (including Asian Longhorned Beetle and Eucalyptus Longhorned Borers) Flatheaded Borers (including Bronze Birch, Alder Borers and Emerald Ash Borer) Japanese Beetles (adult) Lacebugs Leaf Beetles (including Elm Leaf Beetles and Viburnum Leaf Beetles)

Leafhoppers (including Glassy-winged Sharpshooter) Leafminers (including Birch Leafminers) Mealybugs Pine Tip Moth Larvae Psyllids Root Weavil Larvae (induding Black Vine Weavil) Royal Palm Bugs Sawfly Larvae Scales (including Armored Scale [suppression] and Soft Scale)

Thrips Whiteflies



- Very little
- Can use on pests not listed only if the site of application is listed
- In most cases you can use LOWER rate than on the label

Tree & Shrub

Bayer Advanced Garden TM Tree & Shrub Insect Control provides 12-Month systemic protection against damaging insects including Leafminers, Beetles, and Borers. Having beautiful trees and shrubs has never been easier.



Bayer 🗟

Review of Pesticide signal words

- Caution
 - LD₅₀ greater than
 500 mg/Kg
- Warning
 - LD₅₀ 50-500 mg/Kg
- Danger Poison
 - LD₅₀ less than 50 mg/
 Kg





Classifying insecticides by chemical class

- Organo-phosphates
- Carbamates
- Botanicals
- Pyrethroids
- Neo-nicotinoids
- Others



Organophosphates

- Many formerly common pesticides
 - chlorpyrifos (Dursban)
 - diazinon
 - acephate (Orthene)
 - malathion
- Disappearing from market





Botanicals

- Pesticides derived from plants
 - pyrethrins
 - neem extracts & oils
 - rotenone
 - Mint oils
 - citrus oils
 - clove oil
 - other essential oils



Neem_seed

Chrysanthemum cinerariifolium C. coccineum

Pyrethrins



- From ground-up flowerheads of pyrethrum daisies
- A natural combination of six compounds: pyrethrins I and II, jasmolin I and II, and cinerin I and II
- More uses approved than any other insecticide
- Usually includes a "synergist" to keep insects from detoxifying it



Pyrethroids

- Synthetic chemicals based on pyrethrins chemistry
- Broad spectrum replacements for Dursban[®], diazinon
- Low in toxicity to birds and mammals, but hazardous to fish in some settings





Pyrethroids

- Recognize by suffixes: -thrin or –ate
- Examples:
 - Esfenvalerate
 - Permethrin
 - Bifenthrin
 - Cyfluthrin
 - Allethrin
 - Sumithrin
 - Others





Neonicotinoids

- New class of systemic pesticides
 - imidacloprid (Bayer)
 - dinotefuran (Spectracide?)
- Effective against
 - Homoptera
 - Coleoptera (chewing, boring)
 - Thysanoptera
- Relatively low in mammalian, bird toxicity





Organic vs. synthetic

- "organic" pesticides include products derived from natural sources
- Synthetic pesticides are human-produced



Are organic products inherently safe?



Giant hogweed



Even plants have carcinogens!

- Tobacco (leaf) 7 carcinogens
- Strawberry (fruit) 7 carcinogens
- Onion (bulb) 6 carcinogens
- Tea (leaf) 6 carcinogens
- Carrot (root) 6 chemicals
- Cauliflower (leaf) 5 chemicals
- Grapefruit (fruit) 5 chemicals



Source: Phytochemical Database, USDA - ARS - NGRL http://www.ars-grin.gov/duke/activity.html





 Pesticides with minimal impact on people and on beneficial organisms, including beneficial insects



- Insecticidal soaps & oils
 - Kill small and soft-bodied insects and mites. Contact insecticide with short residue
 - Examples: Safer's soap, Sunspray Ultrafine Spray Oil, vegetable and neem oils



- Microbe-derived
 - Consisting of, or derived from microbes. The best are low in toxicity to humans and non-pathogenic to non-target organisms.



 Examples: Bacillus thuringiensis products, spinosad



- Baits
 - Mixture of an insecticide with some sort of food attractive to pest. Generally low percentage active ingredients make these relatively safe.
 - Examples: fire ant baits, containerized cockroach baits, granular ant, cockroach and cricket baits



- Botanicals
 - Derived from plants. Although some active ingredients are toxic, generally formulated as a low percentage a.i. and degrade quickly in the environment.
 - Examples: pyrethrum, neem extract, essential oils, others...





- Insect growth regulators
 - Based on insect hormones unique to arthropods
 - Disrupts reproduction, molting, other growth processes
 - Excellent safety record
 - Products for fire ants, white grubs, fleas, others





- Other low toxicity pesticides
 - Kill through physical or stomach poison action.
 - Generally non-toxic on skin.
 - Examples: silica aerogel, diatomaceous earth, boric acid and borate compounds, sulfur























← → C www.irac-online.org/modes-of-action/														
	HOME	NEWS ABOUT	TEAMS PE	STS CR	OPS	MODES OF ACTION	TEST METH	ODS			INDEX			
	MODE	S OF ACTION												
	The IRAC Mode Of Action (MoA) Classification is the <i>definitive</i> global authority on the target site of insecticides. It is the basis of MoA labelling of insecticides worldwide and is an essential tool for the development of insecticide resistance management (IRM) strategies. For more information please visit the MoA Team page, and should you wish you are welcome to submit an active for classification by the IRAC MoA Team.													
	The colour scheme below associates mode of action into broad categories based on the physiological functions affected, as an aid to understanding symptomology, speed of action and other properties of the insecticides, and not for any resistance management purpose. Rotations for resistance management should be based only on the numbered mode of action groups.													
	Nerve & Muscle Growth Respiration Midgut Unknown or Non-Specific													
	Q FILTER BY MODE OF ACTION, CHEMICAL CLASS OR ACTIVE													
	1	ACETYLCHOLINESTERASE	(ACHE) INHIBITOR	S	2	GABA-GATED CHLORID	E CHANNEL BLOCK	KERS	3	SODIUM CHANNEL MODULATORS				
	A	CARBAMATES		~	A	CYCLODIENE ORGANOC	HLORINES	~	A	PYRETHROIDS, PYRETHRINS	.~			
	В	ORGANOPHOSPHATES		~	В	PHENYLPYRAZOLES (FI	PROLES)	~	В	DDT, METHOXYCHLOR	~			
	4	NICOTINIC ACETYLCHOLIN COMPETITIVE MODULAT	NE RECEPTOR (NAC ORS	HR)	5	NICOTINIC ACETYLCHOL ALLOSTERIC MODULATI	INE RECEPTOR (N DRS	ACHR)	6	GLUTAMATE-GATED CHLORIDE CHA ALLOSTERIC MODULATORS	NNEL (GLUCL)			
	А	NEONICOTINOIDS		~		SPINOSYNS		~		AVERMECTINS, MILBEMYCINS	~			
	В	NICOTINE		~	8	MISCELLANEOUS NON- INHIBITORS	SPECIFIC (MULTI-	-SITE)	9	MODULATORS OF CHORDOTONAL O	RGANS			
	С	SULFOXAFLOR		~	A	ALKYL HALIDES		~	В	PYMETROZINE	~			

Intro to Entomology and IPM Master Gardener Training

Questions?

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