COOPERATIVE EXTENSION
Washington State University

Agrichemical and Environmental News

A monthly report on pesticides and related environmental issues

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Hard-copy subscriptions are $15 a year. Mail check to above address, ATTN: Sally O'Neal Coates, Editor.

Defending Section 18s

WSDA's Pro-Active Compliance Project

Dr. Catherine Daniels, Pesticide Coordinator, WSU

In a move to compile data on Section 18 pesticide applications, the Washington State Department of Agriculture (WSDA) has initiated a new program, the Section 18 Pesticide Compliance Project. What makes this newsworthy is not that compliance inspections are being conducted, but that a minimum of 150 inspections will be conducted on Section 18 pesticide applications this year. In the past, WSDA conducted a total of about seventy-five random agricultural inspections per year, very few of which involved Section 18 pesticides. So why the interest in Section 18 applications now?

Where FIFRA Meets ESA

Two previously unrelated pieces of legislation have been connected recently, resulting in this urgent need for data. The first piece of legislation is nothing new: Section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). This section allows for use of an unregistered material in an emergency situation, subject to approval by the Environmental Protection Agency (EPA) or, in the case of crisis exemptions, WSDA. The resulting exemptions from registration, known colloquially as "Section 18s," are ***extremely*** important tools for pest control in Washington State. In 1999, thirty-nine (crisis and specific) Section 18 exemptions were issued, with an estimated value to Washington agriculture of $447.7 million (see "The Value of Section 18s," *AE-News* No. 168, April 2000).

The second piece of legislation is also nothing new. Section 9 of the Endangered Species Act (ESA) states that it is a violation to modify habitat of a threatened or endangered species in such a way as to affect its behavior, breeding, spawning, rearing, migrating, feeding, or sheltering. Application of pesticides could result in such adverse effects, and civil or criminal penalties could follow if successfully prosecuted. Third parties may bring suit against parties suspected of such violations.

What is new here in Washington State is that several salmonids were placed on the "threatened species" list within the last year. Consequently, FIFRA Section 18 and the ESA now intersect when pesticides that are classified as moderately, highly, or very highly toxic to fish are considered for application in regions where these

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Defending Section 18s, cont.

Dr. Catherine Daniels, Pesticide Coordinator, WSU

threatened fish species live or migrate. WSDA has stated that they do not suspect Section 18 pesticides of adversely affecting threatened salmonoid species, but they do believe that Section 18 pesticides are at particularly high risk to third-party challenge. Consequently, collection and documentation of valid data may be necessary to prove that Section 18 applications, when made in accordance with the requirements of the granting documents, are protective of salmonid species.

Who Is Affected

Washington State salmonid live and migrate over a very large geographical area. WSDA has identified the Chehalis, Cowlitz, Newaukem, Skagit, Touchet, Walla Walla, and Yakima river watersheds as areas of concern. The compliance inspections will be made on a random selection of Section 18 field applications involving certain pesticides in specified areas within these watersheds. Zone maps showing ranges and townships subject to inspection are available through WSDA's Pesticide Management Division web page at **http://www.wa.gov/agr/pmd/pesticides/sect18proj.htm**. (If you aren't certain about your range and township numbers, you can contact your county assessor for this information.)

If you plan to apply a designated pesticide in one of these zones, you must notify WSDA in advance.

Section 18s requested and granted can be viewed at the Pesticide Notification Network web page (**http://www.tricity.wsu.edu/~mantone/pl-newpnn.html**). Those that involve pesticides deemed toxic to fish are highlighted in (what else?) a ***salmon*** color. If you plan to apply one of these pesticides, and if any portion of your application site falls within any numbered grid square on any of the nine maps shown on the WSDA web page, you must notify WSDA forty-eight hours prior to application. WSDA needs advance notice in order to randomly select Section 18 applications and to allow staff to travel to the site.

About the Inspections

The inspections will be like any other standard agricultural use compliance inspection. Should areas of noncompliance be found, appropriate corrective action will be taken.

Because Section 18 applications must comply with the conditions set forth in the granting document, a copy of the granting document should be on hand at the time of application. Copies of most Section 18 granting documents can be downloaded from the Pesticide Notification Network (PNN) web page at **http://www.tricity.wsu.edu/~mantone/pl-newpnn.html**. (Alternately, you can access the PNN page via the Pesticide Information Center On-Line page at **http://picol.cahe.wsu.edu**.)

The ramped-up inspection program does not reflect any lack of confidence on WSDA's part in the safety of Section 18 pesticides. Each Section 18 exemption undergoes a thorough review at WSDA with an eye for environmental effects before being passed to EPA. Rather, data gathered from these 150-plus compliance inspections will be used to verify whether the existing pesticide registration and compliance activities are sufficiently protective of threatened fish species, and, if necessary, prove this safety to parties who challenge it. In addition, WSDA will be collecting and documenting evidence that Section 18 directions are being followed by the field applicators.

For more information about the WSDA Pesticide Compliance Project, contact Deborah Bahs at (360) 902-2037 or **dbahs@agr.wa.gov**.

Dr. Catherine Daniels is the Pesticide Coordinator at WSU's Pesticide Information Center and Managing Editor of AENews*. She can be reached at (509) 372-7495 or* ***cdaniels@tricity.wsu.edu****.*

2000 Pesticide Container Recycling Schedule

Washington Pest Consultants Association

Washington Pest Consultants Association organizes an annual series of collection dates and sites for empty pesticide containers. The table below shows dates for May only; a full schedule through October is available in the electronic version of *AENews.* Dates and locations are subject to change; use the contact information below to confirm. For general questions, or to host an event at your farm, business, or in a central location in your area, contact Northwest Ag Plastics representative Clarke Brown at (509) 965-6809 or David Brown at (509) 469-2550 or **dbrownwash@msn.com**.

CONTAINERS MUST MEET THE FOLLOWING CRITERIA:

• Rinsed—no residue remaining • Clean and dry, inside and out, with no apparent odor •
• Majority of foil seal removed from spout (small amount remaining on rim OK) •
• Half-pint, pint, quart, one and two-and-a-half gallon containers accepted whole •
• Hard plastic lids and slip-on lids removed • Five-gallon containers accepted whole if lids and bails removed •
• 30 and 55-gallon containers accepted whole if above criteria is met •

DATE	TIME	LOCATION	SPONSOR	CONTACT	PHONE
May 1	8a-Noon	Walla Walla	McGregor's	Gary Burt	(509) 529-6787
	1p-3p	Waitsburg	McGregor's	Terry Jacoy	(509) 337-6621
May 2	8a-11a	Pomeroy	Western Farm Service	Jerry Wilsey	(509) 843-3491
	1p-3p	Dayton	McGregor's	Jeff Bruce	(509) 397-4704
May 3	8a-10a	Prescott	Agri Northwest	Shawn Elder	(509) 547-8870
	11a-2p	Prescott	Broetje's Orchard	Joe Shelton	(509) 749-2217
	3p-5p	Prescott	Flat Top Ranch	Dave Hovde	(509) 547-9682
		Pasco	Air Trac	Gerald Titus	(509) 547-5301
May 4	8a-11a	Eltopia	Wilbur Ellis	Vern Record	(509) 297-4291
	1p-3p	Eltopia	Eastern Wa Spray Serv.	Willis Maxon	(509) 297-4387
May 5	8a-Noon	Connell	B&R Crop Care	Chris Eskildsen	(509) 234-7791
	1p-3p	Pasco	Pfister Crop Care	Steve Pfister	(509) 297-4304
May 8	1p-3p	Seattle	Washington Tree Svc.	Ron Angel	(360) 362-9100
May 9	8a-Noon	Mount Vernon	Skagit Public Works	Robin LaRue	(360) 336-9400
	1p-3p	Mount Vernon	Tronsdale Air Service	Kevin Belisle	(360) 661-0422
May 10	8a-11a	Port Orchard	Kitsap Mod. Risk Facility	Niels Nicolaisen	(360) 337-5781
		Olympic View Ind. Pk	Omega Pest Management	Todd Best	(360) 373-4531
	1p-4p	Tacoma	DOT/Wilbur-Ellis Co.	Randy Knutsen	(253) 351-6591
		DOT Permit Office		Dave Patterson	(253) 589-7255
May 11	8a-Noon	Puyallup	Pete's Spray Service	Pete Tovoli	(253) 922-9437
May 12	8a-Noon	Centralia	Lewis Cty Public Works	John Prigmore	(360) 740-1193
	2p-4p	Morton	DOT	Craig Robbins	(360) 496-5516
May 16	8a-10a	Fairfield	Wilbur Ellis	Ric Murison	(509) 283-2411
	11a-1p	Waverly	Wilbur Ellis	Monte Bareither	(509) 283-2432
	3p-5p	Tekoa	McGregor's	Charles Wedin	(509) 284-5391
May 17	8a-10a	Oakesdale	Wilbur Ellis	Jerry Jeske	(509) 285-4511
	11a-1p	Garfield	Cascade Flying Service	Doran Rogers	(509) 635-1212
	3p-5p	Palouse	McGregor's	Dale Deerkop	(509) 635-1591
May 18	8a-11a	Pullman	McGregor's	Larry Schlenker	(509) 332-2551
	1p-3p	Mockonema	McGregor's	Dale Deerkop	(509) 635-1591
May 19	8a-11a	St John	McGregor's	Rick Bafus	(509) 648-3218
	1p-3p	Dusty	Dusty Farm Co-Op Inc.	John Stoner	(509) 397-3111
May 22	9a-3p	Outlook	Snipes Mtn. Trans. Stn.	Mark Nedrow	(509) 574-2472
May 23	8:30a-3p	Yakima	Terrace Hts. Landfill	Mark Nedrow	(509) 574-2472
May 30	8a-Noon	Quincy	Wilbur Ellis	Dale Martin	(509) 787-4433
	2p-5p	Quincy	Quincy Flying Service	Richard Weaver	(509) 787-3223
May 31	8a-10a	Ephrata	The Crop Duster	Martin Shaw	(509) 754-3461
	1p-4p	Wilbur Airport	Greg's Crop Care	Greg Leyva	(509) 647-2441

"Our industry does not want pesticide containers to become a waste issue. If we take the time to clean and recycle these products, we can save money, show that the industry is responsible in its use of pesticides, and reduce inputs to the waste stream."

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If I Were the Queen of Labels

Not Princess, Not Apprentice, Not Peon!

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

I believe that there is a well-kept secret regarding pesticide labels in the United States. Perhaps you should sit down before reading any farther. I don't want to alarm you but…

> **there are no rules (read, "none, not a single one") with respect to pesticide labels in this country.**

There, I've gone and done it. Broken the code of silence, spilled the beans. If this is such a well-kept national secret, you might wonder how a lowly Pesticide Information Center employee happened upon the truth. Easy. I have empirical evidence. In our office (the Pesticide Information Center, or PIC, at Washington State University), we review many, many pesticide labels every week. If there ***were*** any rules, we wouldn't see the mess that we do.

But now that I have let the secret out, I am prepared to step in and help. You see, having given the topic a lot of consideration (at least three minutes), I have concluded that my ideal job would be an EPA appointment as the Queen Bee of Labels (QBL, or The One in Charge of All Things Label). I do not jest. As soon as EPA travels to Benton City and pleads with me to take the QBL job—watch out. As my mother used to say regularly when I was growing up and she had reached a certain level of frustration, "There are going to be new rules around here." Once I assume my rightful duties, I will immediately insist on a slate of "new rules" about labels.

Standard Format

I envision something like the Material Safety Data Sheet (MSDS) format, where you always look in the same place for the same information. For example, all environmental information would be found in one section of the label rather than finding an errant groundwater advisory statement tacked onto the last page of the label (See Novartis' Vanquish Herbicide label, EPA Registration Number 100-884). I know that we are all good citizens here and that we all read the labels cover to cover, but wouldn't it be great if we could always go to the same place on the label to find a piece of information?

Designation of Intended Users

With the advent of e-commerce, many pesticide products are available for purchase by homeowners. I believe that safety issues drive the need for some kind of system for designating the intended user group for a given pesticide. Because commercial products contain different (likely more toxic) active ingredients, come in higher concentrations, and are typically packaged in larger quantities than homeowner products, inappropriate use and disposal by homeowners may become a significant concern. My assumption here is that commercial applicators have training in the proper use and handling of these types of chemicals and that they would be more likely to safely use and dispose of these pesticides than a homeowner. Further, it seems likely that homeowners may end up purchasing a larger volume of chemical than they need, which may lead to incidents of improper disposal. Also there is the issue of using a commercial chemical that is not intended for homeowner use in a residential setting. Certainly the neighbors will have something to say about that. After the coronation ceremonies, I, the QBL, will require that all pesticide labels carry a proclamation stating whether the product is intended for commercial or homeowner use. Naturally this will be contained in a box, in a prescribed place, on the standardized label form.

A recent case in point involved the use of Imidan 70-W on apple trees. The label designates it an "agricultural insecticide" and contains chemigation instructions. Under the directions for use on shade and ornamental trees, the label states, "Imidan 70-W is recommended for use by commercial applicators…" While these clues might seem to indicate that this product is intended for commercial (not homeowner) use, a King County resident was using this product on apple trees in his backyard. Inquiries to Washington State Department of Agriculture (WSDA) indicated that nothing on the label *prohibited* a homeowner from using the product. Gowan, the registrant, was very surprised to find that homeowners were using this product, as that was not their intent.

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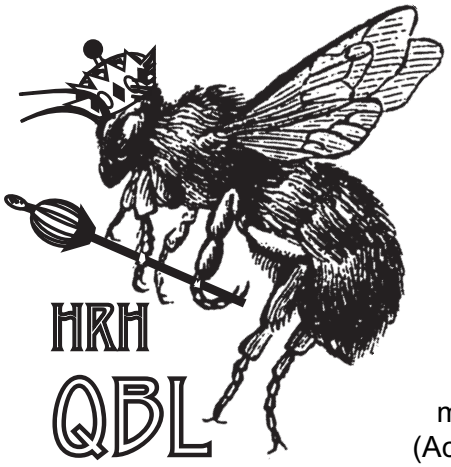
Label Queen, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

Ingredients

Could we please all agree on using common names? It is a wonderful parlor game to spend time looking at a long and complicated chemical name like 3,5,6-trichloro-2-pyridinyloxyacetic acid only to find that its really triclopyr in disguise. I know. You think that this is from a label printed before there was agreement on the common name for this compound. Not so. Riverdale's Horsepower Selective Herbicide (EPA Registration Number 228-313) is a relatively new label—it was first registered in Washington in 1999—and it calls the active ingredient out by the full chemical name. Other labels from other registrants as early as 1995 call this chemical trichlopyr, so why didn't Riverdale use this name? Because there has been no QBL, that's why.



Crop Definitions

I want some rules here. Rules. Rules. Rules. Rules that everyone follows. As the QBL, I visualize many definitions in my future. In fact a whole dictionary of official pesticide label crop definitions. I may establish an entirely new branch of the government whose sole purpose is to define terms used on pesticide labels. For starters, I would define blackberry. (First, it's early in the alphabet and second, I like blackberries.) My burning question is this: when a label says that a product may be used on blackberries, when does it mean that it is OK to use it on boysenberries? If everyone thinks that the answer is clearly "always," then why do we routinely see new labels where these two berries are listed separately on the label as if they were separate entities? It just points to my earlier hypothesis: there are no rules.

And how about the terms rape, rape seed, and rapeseed? If a label says that a product can be used on one of these, does this mean it can be used on leafy vegetable rape, rape seed crops where the seed is used to produce industrial oil, or rape seed crops where the seed is used to grow the leafy vegetable? And what about canola? Now don't give me that old response about crop groupings and EPA definitions. These have to do with tolerances. Show me where it clearly states that these terms are the "official" terms to be used on pesticide labels.

Just a few more and then I'll stop. Let's consider "field grown nursery stock." According to interpretations from WSDA, this phrase sometimes includes things like the daffodil bulbs grown in Washington's scenic Skagit Valley, but…sometimes it doesn't. Can a product that says it is for use on conifers be used on a Christmas tree plantation? How about if it says it is for use on evergreens, ornamental trees, or conifer nurseries—can these be used on Christmas trees? I could go on and on. (Actually I have gone on and on. The QBL-elect apologizes.)

Crop Definitions (Corollary 1)

When a registrant uses a general term like "ornamentals" or "leafy vegetables," then goes on to list individual plants and crops, it is unclear if the list is exhaustive or merely illustrative. By Divine Right, I will require that such lists be preceded by either "for example" or "limited to."

Product Name

Once anointed, I would require, as part of the new program for standardizing the format of pesticide labels, that registrants place the product name on the label in linear type, in a box, all on one line. I know you wonder:

❶ how hard can it be to decipher the product name, and

❷ where ***does*** WSU get its people?

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Label Queen, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

But really, pesticide product names are an issue; this is not as straightforward as it sounds.

During the 1998/1999-registration cycle, Clorox added two bathroom cleaner labels to the products registered for use in Washington. Both carry EPA Registration Number 5813-39. The names shown on the registration sheet are Disinfects Tilex Fresh Shower Daily Shower Cleaner and Tilex Disinfects Fresh Shower Daily Shower Cleaner. The only difference I can see is about a quarter of an inch variation in the placement of the word "disinfects" in relation to the word "Tilex." Is the copy where "disinfects" is up higher on the label the one specified as "Disinfects Tilex?" Once crowned, there is no way the QBL is going to let this sloppy stuff go through. I will require, at a minimum, that such confusing products be differentiated by an illuminating comment such as "Disinfectant Scented," "Formula III," "Original Recipe," "Fast Acting," or (at the very least) "New!" Please note that this is only one example. Believe you me there are many, many others. These are the kind of things that occupy our time here at the PIC. (Don't you wish you worked in our office?)

Clear, consistent label content? It's heady stuff, even for the aspiring Queen Bee of Labels...

Font Size

All labels that are submitted for registration purposes will be required to meet minimum font size criteria. We, who (through no fault of our own) find ourselves in possession of over-forty eyes, need some help. Work with us on this. If not the QBL is going to come down on you and hard.

Use Directions

Registrants will be required to lay out the crop pest information in a standard manner. Most labels present the use information by crop, but We (the royal "we") have recently seen some labels where the layout was organized by pest. The QBL acknowledges that this is an alternative, but she doesn't like it. And while we're on the subject, let's just make a rule that the use directions must be listed in alphabetical order by individual crop or crop grouping.

Geographic Terms

When registrants use terms like "apples (western states)" they need to define exactly how far "east" is still considered "west." Luckily, we Washingtonians can always count on being included as a western sort of state, but what about those other guys?

Uniform Label Review by EPA

In the 1999 registration cycle, Novartis registered two new herbicides, Custom Pak North Star Herbicide (EPA Registration Number 100-923) and Rave Herbicide (EPA Registration Number 100-927). North Star contains primisulfuron-methyl (7.5%) and dicamba (39.9%) while Rave contains triasulfuron (8.8%) and dicamba (50%). The Rave label contains the following statement under the groundwater advisory section: "Both active components of Rave have been identified in groundwater…." However, the Northstar label carries no such groundwater-warning message. (Note that EPA approved both labels at about the same time, late in 1998.) I called Novartis and asked about this. It appears that there was an error on their part that was compounded by EPA not catching this omission during their review.

Wouldn't you think that EPA would have a set criteria for evaluating active ingredients for leachability or that they would just work off a list? Perhaps there is no consensus as to whether dicamba is a threat to groundwater. That would account for what I found when I was investigating what I thought were errors in the Pesticide Information Center On-Line (PICOL) label database (**http://picol.cahe.wsu.edu**) regarding how we coded the groundwater advisory information for dicamba. It seems that many dicamba labels shown by WSDA and ODA (Oregon Department of

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Label Queen, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

Agriculture) as current contain no groundwater warning statement.

We are lucky in Washington (for reasons other than being an obviously western state) because we have the Washington State Department of Agriculture. WSDA has been consistently quick to provide us with label interpretations, which we greatly appreciate. But just imagine how wonderful it would be if there were standard crop definitions and some rules out there regarding label information. For example, what if it were understood that to use a product on a Christmas tree plantation, Christmas tree plantation use directions had to be included on the label? If we did business like this, everyone across the country would know exactly what the registrants intended with their labels. It's heady stuff. Even for a pending royal.

On the other hand, it occurs to me that arguing for standardization, consistency, and definition can be seen as squelching the creative process of both EPA and the registrants. I would propose that if these entities need to exercise their right-brain functions they take up something like basket weaving, watercolor, or poetry. (To foster this endeavor, *AENews* will accept submissions of agrichemical-related poetry, to print on a space-available basis in future issues.)

So, EPA, those phone lines are open. Feel free—call me with that offer: (509) 372-7493.

And the rest of you? If you have a beef with the Queen Bee, specifically with label problems that you think should have been mentioned in this article, you have two options:

1) Send me the details so I can start working on the solution. (Particularly juicy examples of confusing labels may be featured in a future *AENews*.)

2) Buzzzzz off. This is, after all, my article and I ***am*** the QBL— ♫ if only in my dreams. ♫

P.S. The QBL-elect wishes to apologize to Novartis, Clorox, and Riverdale. But the examples really were just too good to pass up.

Jane M. Thomas, aspiring Queen Bee of Labels, currently bides her time as Pesticide Notification Network Coordinator for WSU's Pesticide Information Center. She can be reached at (509) 372-7493 or jmthomas@tricity.wsu.edu. If you are with the EPA and calling to arrange a coronation appointment, you may contact her at home.

Food Safety Conference May 16-17

The eighth annual "Food Safety Farm to Table Conference" will be held this month at the Best Western University Inn in Moscow, Idaho. The conference is co-sponsored by Washington State University Cooperative Extension and University of Idaho Cooperative Extension System. Topics will include:

Foodborne Pathogens of current interest including *Shigella* and *Listeria*

Organics Issues including compost pathogens and the latest on federal organics regulations

Fresh Produce Safety including sprouts and water issues

Biotechnology and GMOs including an overview and the latest on safety

Registration fee is $175 after May 1, and preregistration is required. Fee covers all meeting sessions, luncheons, and refreshment breaks. For a conference brochure or further registration information, contact Chris Eder at (509) 335-2954 or **cecps@cahe.wsu.edu**.

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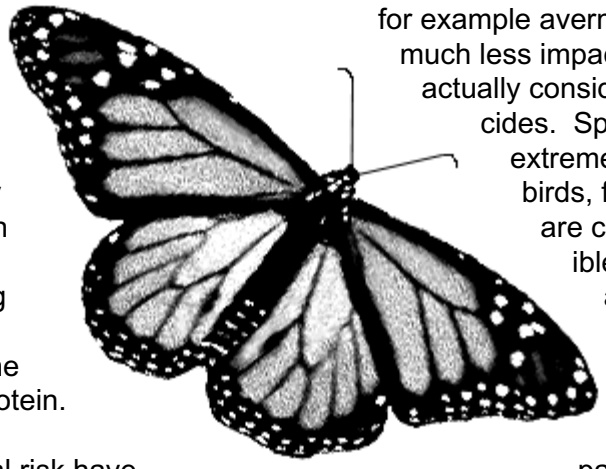
Insecticidal Genes
Part 3: Long Live the Monarch

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

Move over bald eagle. There's a new symbol of environmental destruction in town. The Monarch butterfly *(Danaus plexippus)* has become the new Bambi, giving environmental advocacy groups (EAGS) something fresh to fawn over in their battle against transgenic crops. The butterfly argument metamorphosed out of a paper published last year in the well-respected weekly science journal *Nature* (7). Professor Losey and coworkers from Cornell University reported that Monarchs died when they fed on milkweed leaves dusted with corn pollen originating from a transgenic line of corn containing the gene that makes the toxic Bt *(Bacillus thuringiensis)* protein.



Three areas of potential ecological risk have surfaced regarding transgenic crops:

- ◆ adverse effects on nontarget organisms;
- ◆ pollen flow and cross hybridization of transgenes with other nonengineered plants; and
- ◆ development of pest resistance.

This month's essay deals with risks to nontarget organisms such as our friend the Monarch.

The Nontarget Target

Nontargets include any type of organism unintentionally affected by a pest control activity. Nontargets may be exposed to natural and synthetic pesticidal chemicals by direct feeding on plants treated with a pesticide, on plants conventionally bred to contain high levels of natural toxins, or on plants engineered with a pesticide-producing gene. Nontargets may also be affected because they feed on other organisms, including the pest, that are feeding on such plants. Indeed, possible effects of transgenic crops on predators and parasitoids of pests were of primary interest until the Monarch came along.

Common wisdom holds that ecological effects from Bt-engineered plants can't possibly be as bad as those from synthetic pesticides. This may be true with broad-spectrum conventional pesticides like organophosphates and pyrethroids. However, newer compounds based on microbial fermentation products, for example avermectins and spinosyns, have much less impact on nontargets and are actually considered "reduced-risk" pesticides. Spinosyns, in addition to having extremely low toxicity to mammals, birds, fish, and aquatic invertebrates, are considered particularly compatible with integrated pest management (IPM) systems focused on augmenting natural enemy populations (18). Bt transgenic crops, on the other hand, are being painted by some reports as less compatible with IPM and less conducive to biodiversity, according to some recent reports.

Direct Nontarget Effects— The Monarch Has No Clothes

Every insect is ecologically important to an entomologist, but the beautiful majesty of the Monarch butterfly has rallied the EAGs against Bt transgenic crops. Not only does the Monarch sport a colorful display of creative design, its long-distance migration habits seem unsurpassed for such a "fragile" creature. The Monarch migrates south in the fall as far as Mexico, where it goes through another generation from egg to adult. The new adults migrate back to the United States, making their way into the Corn Belt by early summer. The adults lay their eggs on milkweed, their only known host plant in the United States, and produce one or two new generations of Monarchs during the summer and early fall.

The idyllic peacefulness of massive corn fields speckled with beautiful butterflies gliding around light as feathers was abruptly interrupted by the reports that Bt corn pollen could kill half of the Monarch larvae exposed to it (7). But the study was roundly

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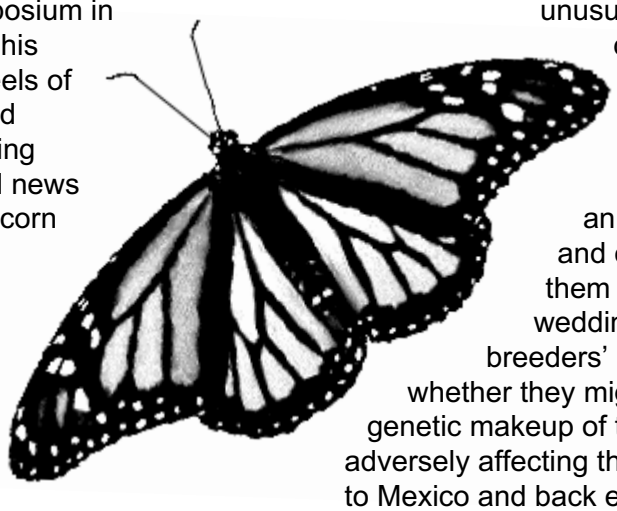
Insecticidal Genes: Monarchs, cont.

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

criticized in various web postings and letters to journals. For example, the dose of pollen was unrealistically high and not even measured. What choice did the Monarchs have but to eat dusted milkweeds? Nevertheless, the research generated an interesting hypothesis. Numerous scientists quickly took up the challenge, and the follow-up research is just now bearing fruit.

First, researchers at Iowa State University reported that corn pollen dispersal drops off precipitously beyond a meter from the cornfield, suggesting that potential exposure of Monarchs is very low (3). However, the researchers did observe mortality (less than 20%) in Monarchs feeding on milkweeds placed right next to the cornfield.

The most recent research from Cornell University and a United States Department of Agriculture (USDA) lab in Iowa was presented at an American Chemical Society (ACS) Symposium in San Francisco in March (1). This symposium followed on the heels of a conference about Bt corn and Monarchs held in Chicago during November 1999, and the good news was the same. First, not all Bt corn strains are toxic to Monarchs, especially those that don't express the toxin in the pollen. Second, studies now show it takes several hundred pollen grains per square centimeter of leaf surface before Monarchs are affected. Such conditions are unlikely outside of the cornfield. Third, Monarchs don't like to feed on heavily dusted leaves, so any negative effects observed in "high dose" studies could have been due to lack of feeding. Fourth, when given a choice, Monarchs don't even like to lay their eggs on milkweeds containing a lot of pollen, even further reducing the opportunity for exposure in the field. Further, surveys of milkweed abundance near cornfields show few plants are even available for egg laying.



I had the opportunity to talk with Dr. Losey at the ACS meeting about his latest Monarch research. He was much less concerned about Monarchs in light of his new findings than the overreaction to his *Nature* article last year would suggest. He and I agree, however, that studies should continue, especially with other nontargets. We scientists just can't have enough data.

Monarch—the Party Animal

Given that Bt-modified corn was used on about 20 and 30% of U.S. corn acreage in 1998 and 1999, respectively, it would be logical to simply ask, how are the Monarchs doing? According to the International Butterfly Breeders Association (IBBA) website, a Professor of Entomology at Iowa State University was quoted in a recent Associated Press article with more good news (9). The summer of '99 was a good year for butterflies in general. Eyewitness accounts corroborated this observation with reports of unusually big numbers of Monarchs during September, evidence of a healthy wild population.

How reliable are the IBBA field reports? This group represents an industry that breeds Monarchs and other butterflies and then sells them for release at special events like weddings. Professional butterfly breeders' biggest concern has been whether they might be changing the natural genetic makeup of the wild populations, and thereby adversely affecting the Monarch's instinct to migrate to Mexico and back every year. So naturally, IBBA members monitor Monarch populations quite closely.

Monarch Envy?

The Green Lacewing Saga and Indirect Nontarget Effects

Because natural enemies of insects don't feed directly on foliage, their exposure to Bt protein would occur if their hosts or prey sequestered the toxin. This scenario is especially important for predators feeding on insects that are not susceptible to the Bt toxin. For

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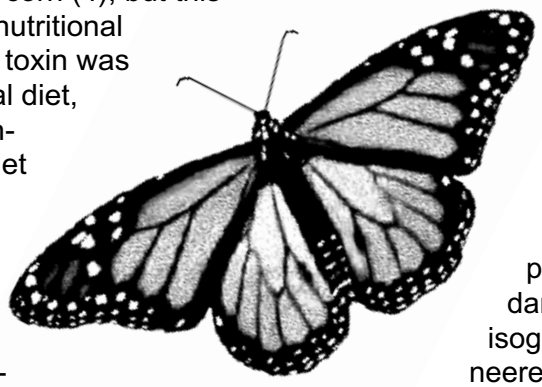
Insecticidal Genes: Monarchs, cont.

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

example, ladybird beetles feed on aphids, and green lacewing larvae feed on numerous soft bodied insects including aphids and moth larvae. Aphids suck plant sap from the phloem and thus may pick up Bt toxin without ill effects, possibly transferring it to its predator beetles. European corn borers *(Ostrinia nubilalis)*, the main target pest for Bt corn, bore into the stalks where they ingest the toxin and could potentially pass on the toxin to predators that can find them.

Green lacewing larvae *(Chrysoperla carnea)* suffered increased mortality when offered European corn borers that had been fed on Bt corn (4), but this could have been caused by poorer nutritional quality of sick corn borers. When Bt toxin was incorporated into a palatable artificial diet, green lacewing mortality also was increased over larvae fed the same diet without Bt (5). These studies prompted EAG websites to declare Bt corn a risk to biological control and IPM. However, what you won't see are the specific results of the green lacewing experiments and mention of field studies that have monitored predator populations.



What really happened in the green lacewing experiments is that larvae died at a rate of about 30% when no Bt toxin (the control) was present in their artificial diet during their whole larval development, but they died at a rate of 57% when Bt toxin was present (5). The relatively high mortality in the control treatment suggested that poor nutritional quality of the diet may have exacerbated mortality when the toxin was present. Pertinently, when green lacewings were offered a nutritious diet of insect eggs during their earliest developmental period, and then switched to an artificial diet during later development, mortality was much lower—27% for Bt-toxin diets vs. 17% for control diets. Although these results still suggest some detrimental effect of the Bt toxin on green lacewings, a curious unpublicized observation was that only larvae in the second stage of development (known as the second instar) were significantly affected. Furthermore, developmental time of the larvae from first instar through pupation to adult was not affected when the Bt toxin-containing diet was supplemented with insect eggs.

Also absent from EAG websites is the conclusion of the researchers who reported the adverse effects in the green lacewings. "Obviously, trials investigating predation efficiency and predator performance under field conditions are necessary before conclusions regarding the potential ecological relevance of the results presented in our paper can be drawn."

What better way to test the relevance of laboratory-observed effects than to go to a cornfield and count green lacewing abundance? Two studies had already reported experiments that compared predator and parasitoid abundance in Bt-transgenic and isogenic (the non-genetically engineered hybrid) cornfields (11, 13). Abundance of natural enemies, including the green lacewing, was not affected in Bt cornfields.

Those field studies indirectly proved what has long been known about predators—they have freedom of choice. In other words, predators constantly move around searching out a variety of prey, many of which are unlikely to have fed directly on corn plants or be affected by them.

Down and Dirty

A lot of people probably don't give a second thought to soil ecology. After all, there are few spectacularly flashy below-ground organisms that can match the beauty and mobility of the Monarch. Yet the soil abounds with a bewildering diversity of organisms interwoven in a food web that is indispensable to fertility. So when soil microbiologists from New York University reported that Bt corn roots exude the Bt toxin (14), eyes veered toward possible threats of transgenic crops to the soil ecosystem.

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Insecticidal Genes: Monarchs, cont.

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

In the NYU studies, Bt corn seeds were germinated on agar and transferred to a nutrient solution for twenty-five days of growth. The nutrient solution tested positively for Bt toxin, and the analyses were confirmed by bioassays with tobacco hornworm larvae *(Manduca sexta)* that were fed the root exudates. When soil in test tubes with the growing corn seedlings was extracted and bioassayed, most of the hornworms also died.

These root exudate experiments followed earlier studies by the NYU scientists that showed Bt endotoxin proteins extracted from Bt spray products were rapidly adsorbed by natural soils, pure clays, and extracted humic acids. Adsorption rendered the Bt proteins resistant to microbial degradation, but they maintained their toxicity to tobacco hornworms when extracted from soil and placed on the insect's food (2, 6, 15). The persistence of the Bt proteins varied among soil types, but their biological activity generally decreased over time (16).

Not surprisingly, only one side of the story has been told on EAG websites. In contrast to the results of the NYU studies, earlier studies in the UK showed a rapid loss of toxicity of the whole crystalline endotoxin when extracted from soil and bioassayed against white sulfur butterflies *(Pieris brassicae)* (19, 20). Information submitted to the EPA for registration of transgenic Bt corn plants showed rapid loss of Bt toxin incorporated as plant material into the soil (17). Bt toxin from transgenic cotton foliage was incorporated into soil with a fast initial loss of extractable protein in several soils (12). However, the authors noted that in some soils 35% of the added toxin could still be recovered after several months, suggesting a binding effect to soil constituents as reported by the NYU researchers.

Whether Bt endotoxin persists in soil or is adsorbed is probably ecologically irrelevant unless susceptible species are directly feeding on the adsorbed fraction. In the aforementioned studies, soil extracts were essentially forced upon insect larvae that don't eat soil particles. No contact activity should occur because the Bt toxin is only toxic when directly ingested by susceptible insects. Thus, the relevant question is, "How do ecologically important soil organisms react to the presence of plant-incorporated Bt toxins?"

The hypothesis of adverse effects advocated by the NYU researchers can be tested on earthworms, springtails (Collembola) or other organisms ingesting soil and bits of organic matter (i.e., detritivores). The registered Bt transgenic plants have been ground up in soil and bioassayed with earthworms and springtails, which are considered the indicator species for adverse ecological effects in soil. Comparisons of the no-observable-effect concentrations (NOECs) for toxicity with the estimated environmental concentrations from incorporating transgenic plant material into soil indicates the likelihood of an effect is very low (17) (Table 1). Bear in mind that Bt spores and their associated toxic crystalline proteins are naturally abundant in soil (8). Thus, soil- and detritus-ingesting organisms may already be frequently exposed to the toxic protein. Pertinently, the known susceptible invertebrates are not soil-dwelling, but rather plant-dwelling and aquatic insects (8).

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TABLE 1

Comparison of Bt toxin no observable effects concentration (NOECs) in soil (milligrams per kilogram of soil) to the estimated environmental concentrations (EEC, also mg/kg)

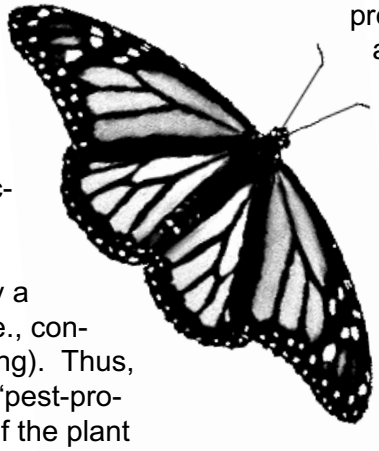
Transgenic Bt Corn	EEC	Earthworm NOEC	Springtail NOEC
Monsanto YieldGard; CryIA(b)	NG*	>200	>200
Novartis; CryIA(b)	0.00042	"non-toxic"	0.08
Dekalb; CryIA(c)	9.8	>98	>98
Aventis (AgrEvo) Starlink; Cry9c	0.11	>1.84	>180

***Not given on the EPA biopesticide fact sheet.**

Insecticidal Genes: Monarchs, cont.

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

Late-Breaking News— NAS Weighs In



The National Academy of Sciences (NAS) recently released a report from a committee specially formed to assess environmental and health hazards of transgenic crops possessing pest-protection properties (10). The report emphasized that the focus of risk assessment should be on the properties conferred by a gene, not the process of modification (i.e., conventional breeding vs. genetic engineering). Thus, the NAS committee coined a new term: "pest-protected plants." Focusing on properties of the plant and not the engineering processes is an especially good idea with Bt transgenics. Not all Bt cultivars contain equal amounts of toxin, and some don't even express the toxin in the pollen.

Heeding their own advice ("properties, not process") the NAS committee scrutinized the health and environmental effects of both conventionally bred pest-resistant crops and transgenic crops. All of the potential health and ecological effects of transgenic crops have already been documented among different conventionally bred crops. Indeed, the committee concluded that transgenic crops really pose no new problems, but that constant vigilance is required to ensure their safety.

Principles and Progress

Good questions have been asked regarding potential ecological effects, and preliminary experiments have generated new hypotheses to test. Some of the concerns about ecological effects can be answered by "first principles," i.e., answers based on current knowledge of ecological interactions, evironmental chemistry, biochemistry, and physiology. Most concerns are being addressed prior to release of commercial transgenic cultivars, while others are being answered as part of continued product development and monitoring.

The concept of a "precautionary principle" has been bandied about so frequently as to give it an air of authority. Some go so far as to say that precautionary principle should replace risk assessment as the pathway toward determining product safety. Should any concerns or allegations, no matter how spurious, be raised about a product, the precautionary principle would require precautionary measures be put in place and all burden of proof to the contrary would fall on the proponent of the activity alleged unsafe. While a philosophy of caution is fine and noble, the precautionary principle is increasingly exploited as an impediment to development and implementation of new technologies. A better role for the precautionary principle is that of a reminder of our obligations. Given the body of pest-protected plant research already generated and the experiments planned, I think we're doing just fine.

Dr. Allan S. Felsot is an Environmental Toxicologist at WSU's Food and Environmental Quality Laboratory. He can be reached at (509) 372-7365 or ***afelsot@tricity.wsu.edu****.*

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Insecticidal Genes: Monarchs, cont.

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CORRECTION

AENews regrets the omission of units of measure within two tables in the February issue, No. 166. In "The Chlorpyrifos Risk Assessment: Part 3," Table 2 units should have been identified as parts per million, and Table 3 units should have been identified as parts per billion. We regret any confusion caused by this omission, and thank our loyal readers for catching and reporting such items. Corrected tables can be found in our on-line version at **http://www2.tricity.wsu.edu/aenews/Feb00AENews/Feb00AENews.htm.**

Noteworthy New Products

Dr. Douglas B. Walsh, Washington State IR-4 Liaison

A number of new pest control products have been introduced over the past several years, many of which exhibit reduced risk and may serve as viable alternatives for older pesticides. Last month, *AENews* included a partial list of newer herbicides. This month, a partial list of newer insecticides is offered below. These lists were compiled from the Interregional Research Project #4 (IR-4) Winter 2000 newsletter. A more complete product table, including more herbicides and insecticides, plus fungicides, nematicides, and plant growth regulators, can be seen in the electronic (on-line) version of the April 2000 *Agrichemical and Environmental News* at **http://www2.tricity.wsu.edu/aenews/April00AENews/Apr00AENews.htm**. Further details on individual products can be found on the IR-4 website at **http://www.cook.rutgers.edu/~ir4/**. If you are interested in determining whether specific technologies could meet your crop protection needs, please contact me at (509) 786-2226 or **dwalsh@tricity.wsu.edu**.

Insecticide	Trade Name	Crop	Registrant	Chemistry	Pest Control Spectrum
Abamectin	AGRIMEK	Registered on potato, celery, tomato, lettuce, pear, apple, hop, grape, cucurbits, and seed alfalfa. Pending use on leafy vegetables and plum. Potential use on onion and caneberry.	Novartis	Avermectin	Broad spectrum acaricide with activity on leafminers, Colorado potato beetle, and pear psylla. Weak against sucking insects and thrips. Good IPM tool with short re-entry interval.
Acetamiprid		Pending use on pome fruit, grape, leafy vegetables, and fruiting vegetables.	Aventis	Chloro-nicotinis	Broad spectrum control with contact and systemic activity via foliar applications. Excellent on sucking pests like aphids and whitefly.
Azadirachtin	NEEMIX, NIBLECIDINE	Registered on pome and stone fruits, grape, berries, cucurbits, bulbs, legume, fruiting, root & tuber vegetables, and herbs/spices.	Thermo Trilogy	Biopesticide	Disrupts insect molting. Target pests include whitefly, leafminer and Lepidoptera.
Bifenazate	FLORAMITE	Registered on ornamentals. Pending use on pome fruit, stone fruit, grape and strawberry. Potential use on fruiting vegetables, cucurbits, caneberry, mint.	Uniroyal	Carbazate	Controls spider mites, including eggs and motiles. Safe on predator mites.
Buprofezin	APPLAUD	Pending use on cucurbits and lettuce. Potential use on grapes, stone fruits, pome fruits and tomato.	Aventis	Thiadiazone	Good activity for nymphal stages of leafhoppers, plant hoppers, scales and whiteflies.
Canola Oil		Registered on alfalfa, apple, pear, apricot, cherry, nectarine, blueberry, cranberry, corn, cucurbits, tomato, grape, raspberry, strawberry, sugar beets and sweet corn.	W. Neudorff	Natural Product	Controls mites, scales, and aphids.
Chlorfenapyr	ALERT, PIRATE	Potential use on lettuce, cabbage, tomato, potato, spinach, strawberry, onion, mustard greens, caneberry, hops.	American Cyanamid	Pyrrole	Controls mites, leafminer, armyworms, cabbage loopers, diamondback moth, fruitworms, pinworms, hornworms and Colorado potato beetle.
Cinnamon Oil	VALERO	Potential use on grapes.	Mycotech	Natural	Controls mites and other insects.
Clothianidin	V-10066	Potential use on apple, pear and turf/ornamentals.	Valent & Takela	Neo-nicitinoid	Contact and stomach activity.
Cyfluthrin	BAYTHROID	Registered on potato, sweet and field corn, tomato, alfalfa, sorghum and carrot. Pending use on dry pea.	Bayer	Pyrethroid	Manages cabbage looper, potato leafhopper, Colorado potato beetle, European corn borer, flea beetle and potato tuberworm.
Deltamethrin	DECIS	Pending use on barley, broccoli, field corn and popcorn.	Aventis	Pyrethroid	Manages beetles, bugs and Lepidoptera.
Diflubenzuron	DIMILIIN	Registered on mushrooms. Pending use on pear. Potential use on rhubarb and stone fruit.	Uniroyal	Substituted benzoylurea	Controls a wide range of leaf feeding insects.
Emamectin Benzoate	PROCLAIM, STRATEGY	Registered on leafy vegetables. Pending use on fruiting vegetables. Potential use on pome fruit and cranberry.	Novartis	Synthetic Avermectin analogue	Effective on larval Lepidoptera.
Esfenvalerate	ASANA	Registered on field corn, popcorn, apple, stone fruits, pear, carrot, cucumbers, melons, pumpkin, squash, beans, peas, lentils, potato, radish, sweet corn and tomato. Pending use on canola.	Dupont	Pyrethroid	
Pyridaben	PYRAMITE	Registered: apples and pears. Pending: grapes, stone fruits and cranberry. Potential: strawberry and hops.	BASF	Pyridazinone	Activity on mite, whiteflies, aphids, mealybugs, leafhoppers, and thrips. Good for IPM.
Pyriproxyfen	KNACK, DISTANCE, ESTEEM	Registered on pome fruit, fruiting vegetables and stone fruit. Potential use on blueberry.	Valent	Pyridene	Controls scales, whiteflies, thrips, pear psylla, codling moth, and ants. Effective on eggs and immature stages. Excellent for IPM programs.
Spinosad	SUCCESS	Registered on apple, fruiting and leafy vegetables, potato, sweet corn, legumes, wheat, cucurbits, stone fruit and sorghum. Pending on barley, buckwheat and turnip greens. Potential use on remaining vegetables, turnips, onion, blueberry, cranberry, grape	Dow Agro-Sciences	Macrocyclic lactone	Controls Coleoptera, Diptera, Hymenoptera, Isoptera, Lepidoptera, Thysanoptera, Siphonoptera and mites.

Tolerance Database Up to Date

Crop Management Tool Now Even More Useful

Jane M. Thomas, Pesticide Notification Network Coordinator

The Pesticide Information Center at Washington State University is pleased to announce that we have completed updating the PICOL tolerance database. This free database contains tolerance information on crops relevant to the Pacific Northwest. Data entry had fallen behind over the past eighteen months because of manpower (or in our case, womanpower) constraints in our office. We apologize for any inconvenience this may have caused, and we are now happy to say that we are up to date and plan to stay that way.

The PICOL tolerance database, like the PICOL label database (see related article, page 4), is accessed via the Pesticide Information Center On-Line (PICOL) web page at **http://picol.cahe.wsu.edu/**. From the main page, select the second item, "Pesticide Label/Tolerance Database," which is followed by a log-in screen. Fill in all items, then select "Tolerance Database" at the bottom in place of the standard default, "Label Database."

Please note that we have added a bunch of new tolerance crop codes ("bunch" is a technical term) in order to more precisely identify each tolerance, so be sure to check the crop dictionary when you want to retrieve information. There are many general crop codes in the database: All Food/Feed Items (except those listed); Food Commodities Exposed in Food Handling Establishments; Raw Agricultural Products (except as listed); Raw Agricultural Commodities; and various crop groups). Because of these, it may be cumbersome to find all of the tolerances relevant to a common crop (say, apples) using a crop-based search. Instead, try searching the database by active ingredient. This method will provide you with a complete list of tolerances for that chemical.

We have retained recently revoked tolerances in the database, assuming that this would be valuable information to our database users. Each of these is flagged as revoked and the revocation date is included in the notes.

Finally, the tolerance database does not include any animal feed, milk, meat, or egg tolerances, even though we do produce those items in Washington (something had to go in order for us to keep current on data entry). Should you need these tolerances, we have added a direct link to the Code of Federal Regulations searchable web page; you'll find it in our "Help with Queries" section.

We welcome your feedback on the tolerance database. Let us know about any errors you find or changes you would recommend.

Contact Jane M. Thomas at jmthomas@tricity.wsu.edu or (509) 372-7493.

Dear Aggie

Providing answers to the questions you didn't know you wanted to ask

In contrast to the usually more sober contributors to the Agrichemical and Environmental News*, Dear Aggie deals lightheartedly with the peculiarities that cross our paths and helps decipher the enigmatic and clarify the obscure. Opinions are Aggie's and do not reflect those of WSU. Questions may be e-mailed to Dear Aggie at* ***dearaggy@tricity.wsu.edu****.*

Dear Aggie,

While surfing the web the other night looking for interesting recipes using apples, I came across this report called* A Few Bad Apples*. I couldn't believe my eyes! The report essentially impugned the reputation of Washington apples, claiming that a child eating just a few bites of an apple may be consuming an unsafe dose of pesticides. Is that true? Sign me,

Appalled

Dear ~~Appled~~ Appalled:

Aggie took to the electronic waves and found the same report (subtitled: *Pesticides in Your Produce--Why Supermarkets Should "Test and Tell"*). It's on the Environmental Working Group's web site at **www.ewg.org**. Before you chuck those Fujis and Red Delicious and purge every apple recipe from your kitchen, consider the way EWG came to their admittedly alarming conclusion.

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Dear Aggie, cont.

from page 15

EWG secured twenty-five bags of apples from Seattle supermarkets in October 1999 and January 2000. They had them tested for a number of different pesticides registered for use pre- and post-harvest on apples. So far, so good.

It's when EWG announced the magnitude of pesticide residues they found that things began to go awry. (At least in Aggie's not-particularly-humble opinion.) Scrutiny of the data reveals that many of the residues detected weren't organophosphates (OPs) as implied. Many detections, in fact, were thiabendazole, a post-harvest protectant against rotting. (Now, Aggie is not particularly thrilled at the idea of scarfing down thiabendazole, either. That's why it's a good idea to wash your hands after eating a banana, because those little numbers are all dipped in thiabendazole at the packing plant.)

But back to these Bad Apples. EWG claims that the azinphos-methyl and methyl parathion residues they detected on their apples were at unsafe levels. Aggie thinks we attended different math classes. If you calculate the dose a child would get from eating a whole apple with the *highest* Guthion residues cited in the EWG studies, the result is a dose five times *less than* the EPA's Reference Dose (RfD--the dose below which there is a reasonable certainty of no harm from aggregate exposure.) Considering that the RfD is already *100 times less than a dose causing no effects at all* in laboratory rats, this apple lover is unlikely to change dietary habits any time soon. Besides, didn't EPA cancel the use of methyl parathion on fruit last year? Peel your apples for the rest of this season, and you're done with that concern.

So, Appalled, consider the source. It's EWG's job to look on the gloomy side, sound science notwithstanding. (Some would say it's also their job to generate media attention, because media furor generates funds. Now, Aggie would never say that, but SOME would.)

Let's just say that this is one report with more than a few scientific wormholes.

PNN Update

Jane M. Thomas, Pesticide Notification Network Coordinator

The Pesticide Notification Network (PNN) is operated by WSU's Pesticide Information Center for the Washington State Commission on Pesticide Registration. The system is designed to distribute pesticide registration and label change information to groups representing Washington's pesticide users.

PNN notifications are available on our web page. To review those sent out in February, either access the PNN page via the Pesticide Information Center On-Line (PICOL) Main Page, **http://picol.cahe.wsu.edu/,** or directly, at **http://www.tricity.wsu.edu/~mantone/pl-newpnn.html**.

We hope that this new electronic format will be useful. Please let us know what you think by submitting comments to Jane Thomas at (509) 372-7493 or **jmthomas@tricity.wsu.edu**.

Federal Register Summary

In reviewing the February postings in the Federal Register, we found the following item that may be of interest to the readers of Agrichemical and Environmental News.

In the March 1 Federal Register, EPA announced the availability of the revised risk assessments for ethyl parathion and fenitrothion. Electronic copies of these risk assessments can be accessed on the Internet at http://www.epa.gov/pesticides/op/status.htm. (Page 11050)

In the March 10 Federal Register, EPA announced that the revised risk assessment and related documents were available for disulfoton. Electronic copies of these documents can be accessed from http://www.epa.gov/pesticides/op/disulfoton.htm. (Page 12992)

In the March 20 Federal Register, EPA announced that revised risk assessment and related documents were available for phosmet. Electronic copies of these documents can be accessed from http://www.epa.gov/pesticides/op/phosmet.htm. Comments on these documents should be submitted to EPA on or before May 19, 2000. (Page 14967)

In the March 22 Federal Register, EPA announced the availability of the revised version of the pesticide science policy document entitled "Choosing a Percentile of Acute Dietary Exposure as a Threshold of Regulatory Concern." An electronic copy of this document, and certain other related documents, are available at http://www.epa.gov/pesticides/trac/science/. (Page 15330)

In the March 27 Federal Register, EPA announced the availability of the revised risk assessments and related documents for phostebupirim and tetrachlorvinphos. Electronc copies of these documents are available at http://www.epa.gov/pesticides/. Comments on these documents must be received by EPA on or before May 26, 2000. (Page 16197)

In the March 29 Federal Register, EPA announced that revised risk assessment and related documents were available for pirimiphos-methyl. Electronic copies can be accessed at http://www.epa.gov/pesticides/op/pirimiphos_methyl.htm Comments on these documents should be submitted to EPA on or before May 30, 2000. (Page 16592)

In the March 29 Federal Register, EPA announced the availability of a draft Pesticide Registration (PR) Notice. This PR Notice, a guidance document, is intended to clarify certain portions of residential insecticide product labels. The proposed label modifications are aimed at reducing unnecessary exposure and helping provide EPA with additional methods of estimating residential exposure to pesticides. An electronic copy of this draft PR Notice is available for review at http://www.epa.gov/pesticides/op. Comments should be submitted to EPA on or before May 30, 2000. (Page 16614)

In the March 29 Federal Register, EPA announced the availability of a draft Pesticide Registration (PR) Notice that identifies pests of significant public health importance for the purpose of regulation under FIFRA. EPA, in coordination with the Department of Health and Human Services and the Department of Agriculture, has identified pests of significant public health importance and has developed the list as required by FIFRA. An electronic copy of this draft PR Notice is available for review at http://www.epa.gov/opppmsd1/PR_Notices/pr2000-draft.htm. Written comments should be submitted to EPA on or before May 30, 2000. (Page 16615)

In the March 31 Federal Register, EPA announced the availability of the revised version of the pesticide science policy document entitled "Assigning Values to Non-Detected/Non-Quantified Pesticide Residues." An electronic copy of this document is available at http://www.epa.gov/oppfead1/trac/science/. (Page 17266)

In the March 31 Federal Register, EPA announced that the agency is proposing to revoke 67 meat, milk, poultry, and egg tolerances for residues of the organophosphate pesticides fenthion, methidathion, naled, phorate, and profenofos. EPA has determined that there are no reasonable expectations of finite residues in or on meat, milk, poultry, or eggs for these organophosphates. Comments on this proposed action should be submitted to EPA on or before May 30, 2000. (Page 17236)

Tolerance Information

Tolerance Information						
Chemical (type)	Federal Register	Tolerance (ppm)	Commodity (raw)	Time-Limited		
				Yes/No	New/Extension	Expiration Date
fenpropathrin (insecticide)	2-Mar-00 pg 11234	5.00	pome fruits	No	N/A	N/A
		5.00	grapes			
		10.00	raisins			
		3.00	brassica, head and stem (subgroup 5-A)			
		0.50	cucurbits (subgroup 9-A)			
imidacloprid (insecticide)	2-Mar-00 pg 11243	0.05	field corn, grain	Yes	New	31-Dec-00
		0.20	field corn, fodder			
		0.10	field corn, forage			
			tolerances are established.			
bentazon (herbicide)	8-Mar-00 pg 12122	3.00	succulent peas	No	N/A	N/A
diclosulam (herbicide)	8-Mar-00 pg 12129	0.02	soybean seed	No	N/A	N/A
dichlormid (inert ingredient: herbicide safener)	27-Mar-00 pg 16143	0.05	popcorn; grain & stover	Yes	New	27-Mar-02
		0.05	field corn; grain, stover, & forage			
gluphosinate ammonium (herbicide)	31-Mar-00 pg 17170	25.00	aspirated grain fractions	No	N/A	N/A
		1.10	canola, meal			
		0.40	canola, seed			
		4	field corn, forage			
		0.20	field corn, grain			
		6.00	field corn, stover			
		5.00	soybean hulls			
		2.00	soybeans			
		5.00	sugarbeet, molasses			
		0.90	sugarbeet, roots			
		1.50	sugarbeet, tops			