COOPERATIVE EXTENSION
Washington State University

Agrichemical and Environmental News

A monthly report on pesticides and related environmental issues

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The newsletter is available from the Internet via the Pesticide Information Center Web page at http://picol.cahe.wsu.edu

Now You See It, Now You Don't

Dr. Carol Weisskopf, Analytical Chemist, WSU

The Food Quality Protection Act (FQPA) focuses pesticide risk evaluation on human exposure, the bulk of which is considered to be from food. Dietary exposure is not a particularly easy number to determine. The calculation of exposure levels seems straightforward: one can take the average pesticide concentration found on a particular food item multiplied by the amount of that food in the average diet. Contributions of a pesticide from all food items in the average diet would make up the total exposure for that chemical. This exposure level could be compared to some level known or thought to be safe. Safety factors taking into account variability in pesticide concentrations, consumption patterns and individual susceptibility would be applied, and one could decide if the (overused metaphoric) risk cup is overflowing. Each step of this extrapolation provides ample grounds for debate.

One component of this equation falls directly into the laps of the analytical chemists: determining the concentration of pesticide on a food item. The chemist uses or modifies an existing analytical procedure, or develops a new one, for analysis of a particular chemical on a specific food item. Often this process is simple and occasionally it's not, but residue chemists do these types of analyses regularly. The quality of the data (are the numbers right?) is easy to check. To ensure that the analyses accurately represent the distribution of concentrations present in a food (are the numbers typical?), large numbers of samples can be analyzed. Most of the argument can then center on what the numbers mean – the province of toxicology and risk analysis, not chemistry.

All of this works quite well when there are actual concentration numbers to deal with. One might think that not finding pesticides in a sample would make data evaluation easier than when pesticides were found. Actually, dealing with 'non-detects' is more difficult. Detections and detection limits, their impact on data analysis, and their bearing on FQPA implementation are the subjects of this and next month's contributions to the AENews.

What *is* a detection limit? It all depends on how you look at it. In this discussion, I'll start with the equipment and work backwards.

...continued on next page

...Now You See It

First, there is the **detector sensitivity**. That is the minimum amount of a chemical that we need to deliver to a particular detector to 'see' it. Our senses (particularly taste and smell) are good analogues for instrumentation. I am capable of detecting 0.1mg of sucrose in a direct delivery (I can taste 1 grain of sugar when I put it right on my tongue). This is an amount, not a concentration. But, just as we rarely encounter sugar in pure form in our diet, this is not the most typical sample description for our instrumentation.

We are rarely able to put small amounts of pure material (like sugar) right in one of our detectors. We usually need to have the chemical in a solvent, a small amount of which is introduced into the chromatographic system preceding the detector. In a 2 milliliter (mL) delivery, I can detect sucrose in dihydrogen oxide at a concentration of 3 milligrams (mg)/mL (in a sip, I can taste a concentration equal to a quarter of a teaspoon of sugar in one cup of water). In this example, I have had to deliver 60 times more sugar to be able to taste it, which is the case with our instruments as well. Sample delivery is important. If a sprayer rather than a spoon was used for tasting, there would have to be a lot more sugar to detect it. This concentration is the **instrumental detection limit**. It is a function of the detector, the chromatographic system and the injection method.

This detection limit is *not* the same as the limit for the concentration in our sample. We can take our original cup full and boil it down to a final volume of 2 mL (a sip). All the sugar *should* stay, although I haven't actually tried it. At the instrumental detection limit (taste threshold) of 3 mg/mL (3,000 ppm) previously established, boiling down the sample would allow the concentration of sugar in the original (pre-boiled) water sample to be 0.024 mg/mL, which is 24 ppm! This is the **method detection limit**, and depends on the sample size. If we boil down a one gallon sample, the method detection limit would be 1.5 ppm.

Detector sensitivity varies somewhat by manufacturer. A single chemical may also be analyzed by more than one detector, at different sensitivities (there *is* a discernable smell to sugar water, but it has to be extremely concentrated). The sample size can vary, depending on availability. Finally, the detection limit can vary according to the matrix, or type of sample. Water is easy. If we took a gallon of coffee and boiled it down to one teaspoon, we would need a lot of sugar to be able to taste it. In fact, with a gallon of boiled-down coffee, the amount of sugar necessary to taste probably wouldn't fit in a teaspoon.

Coffee, in comparison to water, is what chemists refer to as a 'dirty' sample. Chemists might like our coffee strong (our horseradish hot and our garlic robust) but we prefer our samples wimpy. A dirty sample needs cleanup steps in the sample work-up, and still can't reach the same method detection limits as a clean sample. Dirty samples are harder to analyze, take longer, the results are usually more variable, and the detection limit higher than is the case for clean samples. Things that our personal detectors work well on (highly flavored, odored or colored) also produce high backgrounds in chemical analyses. Clean commodities are water and iceberg lettuce. Hard ones include onions, the cabbage family, horseradish, and hops.

Variabilities in sample types (water, coffee, lemon juice) inevitably lead to differences in method detection limits among commodities. Variabilities in instrumental detection limits because of the detector used in an analysis (taste vs. smell), as well as efficiency of the chromatographic systems, lead to differences between labs. We also need to throw in differences among chemicals analyzed. By both odor and taste, we could detect sugar more easily than corn starch in coffee or in water.

What happens when we can't taste a quarter of a teaspoon of an unidentified white powder in our cup of coffee? If it were sugar, it wouldn't be an issue even if we were overweight. If it were a plutonium salt the folks next door at Hanford would certainly get excited.

Dr. Carol Weisskopf, Analytical Chemist, WSU

It would be convenient if the most toxic compounds had correspondingly low detection limits. However, among the most easily detected compounds in residue chemistry are phthalates. Several of our detectors respond well to these industrial chemicals. They are present in plastics and a host of other products (including the plastic wrap in which vegetables are occasionally packaged), are ubiquitous in the laboratory and in the environment. The banned herbicide Dinoseb is more difficult to detect, although considerably more toxic.

Easy and hard crops, sensitive and unresponsive pesticides, new and old instruments – all conspire to make detection limits moveable objects. It's not rocket science. We don't usually need to hit the moon. A method detection limit comfortably below an established tolerance or environmental criteria has been good enough. In the past, there has rarely been a compelling reason to push to the absolute limits of method or instrument sensitivity in routine analyses.

A method that is more sensitive than needed is not cost-effective. Lower sensitivities are achieved with increase in personnel time, supplies and equipment costs. The detection limit required for an analysis depends on the intended use of the data. If one were looking at the spray pattern from a piece of application equipment, the concentrations are expected to be high, and we would probably be making dilutions rather than pushing our detection limits. If we were making sure that a pesticide concentration was below the tolerance levels established for a commodity, a method detection limit one-tenth of the tolerance would be comfortable. Answering some environmental fate questions, such as the transport of pesticides in fog, snow or dust, might require maximum sensitivity from our methods and instruments.

When we complete a study, we generally have some samples in which a pesticide was found, and some in which it was not detected. When we find a pesticide, the use of the data is usually straightforward: concentrations exceeded some regulatory level or not; they increased or decreased; they were higher or lower here than there. Next month, I'll talk about what we think is happening in the imaginary land below the detection limits, how we deal with non-detects, and how FQPA has raised the ante on detection limits in tolerance setting and pesticide use.

Mark Your Calendars-
WSU Pesticide Issues Conference Offered This Fall

The Third PNW "Pesticide Issues Conference: Explaining the Science behind FQPA", will be held October 29, 1998 at the Yakima Doubletree. Topics for this one-day meeting include: Organophosphates and Neural Development Effects; Residue, Reference Dose, and ADI; Detection Levels vs. Tolerance Levels; Global Harmonization of Tolerances; FDA's Monitoring Program; USDA's Pesticide Data Program, Pesticide Use Statistics; Layperson's View of Monte Carlo Analysis; Residues in Water: 10% of the Risk Cup; Residential Exposures: 10% of the Risk Cup; Consumer Brochure Outreach; and, Status of FQPA Implementation.

The conference is devised to provide education for individuals working with pesticide issues, in particular: consultants, agrichemical industry representatives, grower associations, pest management associations, educators, and regulators. A brochure will be mailed in August describing the conference in more detail and listing speakers. Those not receiving a copy of the brochure may request one from the WSU Pesticide Education Program at 509-335-9204 or 509-335-9222, or email **ltroka@wsu.edu.** The registration cost will be $50 per person and cover costs of conference proceedings, brochure, mailing, lunch, refreshments and speakers. Space will be guaranteed for those registering by October 10, and on-site registrations will be welcomed if space is available.

The PNW Ag Safety and Health Center

The Pacific Northwest Agricultural Safety and Health Center (PNASH) is one of eight regional Health and Safety Centers around the nation funded by the National Institute for Occupational Safety and Health (NIOSH). It serves Idaho, Oregon, Washington and Alaska and is tasked with determining the major health and safety hazards in agriculture in these four states. Agriculture, in this case, includes the timber industry and commercial fishing, as well as farming.

The Center, which also receives state funding, is housed in the Department of Environmental Health at the University of Washington. It has the following goals to improve the health of agricultural producers, workers and their families:

- Prevent occupational illness and injury through innovative research and intervention programs.
- Promote health and safety by developing model educational, outreach and intervention programs.
- Develop and evaluate control technologies to prevent illness and injuries.
- Provide consultation and training for health and safety professionals, extension agents, and others.
- Work with other governmental and non-governmental agricultural health and safety organizations, especially other NIOSH-sponsored programs.
- Evaluate the Center's materials and programs to assure that they further these goals.

The Center works with the affected industries in conducting its research, outreach, training and evaluation programs. Earlier this year, the Center sponsored a Farm Summit in Portland, Oregon, attended by about 50 farm operators, farm workers, equipment manufacturers, government officials, health care providers and researchers. These individuals, representing different perspectives of the farming industry, were asked to advise the Center on what they thought were the most significant health and safety problems in farming. The information which came out of this one-day meeting is currently being analyzed and the results will help organizations in the Northwest to establish priorities for future research projects.

A Fishing Summit, designed to accomplish the same objectives for the region's commercial fishing industry, is planned for next year. In the future, a Timber Summit will also be held that will have the same objectives for the lumber industry in the states served by the Center. In addition to determining which hazards those working in the various industries consider most severe, the summits will establish an industry advisory committee. This group of experts from various fields will advise Center researchers regarding industry problems and potential solutions in the states of Alaska, Idaho, Oregon and Washington.

The Center Director is Dr. Richard Fenske, an environmental health scientist with extensive experience in evaluating and preventing pesticide exposures. The co-director is Dr. Matthew Keifer, an occupational medicine physician who has conducted research on pesticide exposures in the United States and Central America. He sees patients in a farm workers clinic located in the Yakima Valley. Other Center staff members include the Associate Director Sharon Morris, who is in charge of the Center's outreach, training and evaluation programs; Dr. Pamela Elkind, director of the Center for Farm Health and Safety at Eastern Washington University at Cheney, which is affiliated with PNASH; Dr. Bruce Alexander, an epidemiologist; Adrienne Hidy, the Center's Program Manager; Marcy White, Program Assistant at the Center; and Norm Herdrich, the Center's Outreach Coordinator.

The Center currently has a number of research programs underway. These run the gamut from an examination of occupational skin disorders in the region's farming, fishing and forestry industries to an intervention program designed to train women to be health and safety assessors on their farm. Topics of study also include exposure of farm children to pesticides; an examination of orchard workers exposed to pesticide residues when thinning fruit; the establishment of a fluorescent tracer evaluation program which is aimed at reducing skin exposure to pesticides among agricultural workers; the evaluation of a field test kit for cholinesterase monitoring to

Norm Herdrich, PNASH Outreach Coordinator

determine if use of such a kit provides advantages in promptness of worker removal from a hazardous situation; and evaluation of how children of farm workers are exposed to lead and arsenic.

In addition to conducting its own research, the Center also provides support to investigators seeking their own funding for agricultural health and safety projects. One research study, for example, is focusing on the causes of injuries to children and adolescents in the farming industry. This project, conducted by Dr. Bruce Alexander in the Yakima Valley of Central Washington, aims to determine the number, ages, and gender of children injured, as well as the causes and severity of the accidents.

Additional information about the Ag Safety and Health Center can be obtained by phone at 509-926-1704, or e-mail normh@u.washington.edu.

Bt Gets Help from a New Biopesticide

Dr. John J. Brown, Chair, WSU Department of Entomology

A diseased silkworm was discovered by a Japanese bacteriologist (Ishawata) in 1901. The disease causing organism was identified as *Bacillus thuringiensis* (Bt) by a German scientist (Berliner) a decade later, and has been used to control select groups of insects for decades since. Bt was first sold under the trade name Sporeine® in 1938. The active ingredient in Bt is a toxic protein that actually binds to specific sites on the midgut cells of the insect. After several of these proteins bind, they create a cavity in the gut cell, allowing leakage and total destruction of the gut. Consequently, the pest insect stops feeding and eventually dies. Applications of Bt are quickly lost if rain soon follows the time of application.

Bt received considerable attention from biotechnology companies, and since 1980 nineteen different companies have had research programs targeting the δ-endotoxin protein. The δ-endotoxin protein was characterized and the genes responsible for synthesis of this toxin inserted into plants. These genetically altered plants with “built-in” insecticides include: corn (Maximizer® or Yield Guard®), cotton (NuCOTN®), potatoes (NewLeaf®), etc. A serious concern is the potential for pests to develop resistance to the δ-endotoxin when it is constantly present within the plant’s genome. This is essentially how resistance to DDT developed. DDT was persistent in the environment, and insects that tolerated the insecticide passed their resistance genes on to their progeny. More lethal agents in addition to the δ–endotoxin of Bt are needed for incorporation into the transgenic crops.

Now, a team of researchers, led by Dr. Richard ffrench-Constant at the University of Wisconsin, have reported on a new bacterial protein toxin isolated from an entomophagous nematode (Science[1998] 280:2129). Some *Heterorhabditae* nematodes puncture their host’s body and infuse the wounded host with bacteria that essentially pre-digest the inside of the host. The nematode then ingests the liquid diet for nutrients. The bioluminescent bacterium researched by Dr. ffrench-Constant is called *Photorhabdus luminescens*. It produces four (A, B, C, D) high molecular weight protein complexes that were investigated by the Wisconsin research team. When tobacco hornworm larvae were fed protein complex A or D, it was as potent as the Bt δ-endotoxin.

Some insect populations have developed resistance to Bt. The discovery of *Photorhabdus luminescens* may allow alternation or co-deployment of both the bacterial toxin carried by the nematode and the Bt toxin, thereby delaying the development of resistance to either toxin alone.

Reference: Bowen, D., T. A. Rocheleau, M. Blackburn, O. Andreev, E. Golubeva, R. Bhartia, and R.H. ffrench-Constant. (1998). Insecticidal toxins from the bacteria *Photorhabdus luminescens*. Science 280:2129-2132.

Singing the Same Old Song—

A Critique of Environmental Working Group's Report, "Same As It Ever Was"

You know you have hit the big time when a Newsweek reporter calls you up for an interview for a story about organophosphate insecticides and the FQPA (Food Quality Protection Act). Intending to be a very cooperative scientist, and dispel the notion that we are stuffy incomprehensible communicators, I was very talkative and eagerly sent the interviewer some of my own essays. Alas, my efforts went unrewarded with nary a use of my ideas yet alone my name in the June 1, 1998 article, "Pesticides and Kids' Risks." The Environmental Working Group (EWG), the advocacy group discussed in this newsletter previously, fared better. Convinced of EWG's wisdom, Newsweek stated, "Despite the administration's 1993 pledge to reduce pesticide use on crops, use is up 10 percent; levels of carcinogenic pesticides in kids' foods have almost doubled." These latter two conclusions come from EWG's recently released report, "Same As It Ever Was…The Clinton Administration's 1993 Pesticide Reduction Policy in Perspective."

Compressed into 30 pages with graphs and tables, the EWG report wants the reader to accept three main premises—pesticide use is rising, pesticide residues in food are increasing, and drinking water is even more polluted than a few years ago. All of these bad things have happened since the Clinton administration announced in 1993 that their goal was to reduce pesticide use, protect children, and promote sustainable agriculture. Implicit in EWG's conclusions is that our world is a riskier place because of Clinton administration policy failures, notwithstanding the FQPA.

I know a lot of progressive growers who would not be shy telling you about the Administration's failures, but I doubt if they would attribute anything out of Washington, D.C. as influencing their choice to use a pesticide. Having children of their own, many growers are just as concerned about health as parents not living on farms. Growers have consistently expressed their desire to reduce pesticide use where possible—after all, they are expensive and a hassle to use. If correct, EWG's conclusions about pesticides would surely be disappointing. A more critical examination of the report, however, suggests that EWG's analysis may be too simplistic, shallow, and perhaps even dead wrong.

Is Pesticide Use Increasing?

EPA has been using pesticide sales as a surrogate for determining trends in pesticide usage. EWG described this technique as an inadequate proxy for actual pesticide usage and called the state of government information primitive. But those inadequacies did not stop EWG from using the EPA data anyway. According to the EWG analysis, agricultural pesticide use jumped from 706 million pounds in 1993 to 790 million pounds in 1996.

Another source of agrichemical usage information is the USDA's National Agricultural Statistics Service (NASS) that makes its database accessible on the internet at http://www.usda.gov/nass/pubs/estindx1.htm#agchem. NASS personnel sample growers within each state using interviews and examinations of actual pesticide use records. The data are subjected to probability analysis to estimate chemical usage and acres treated. The NASS database is developed every other year for fruits and vegetables and every year for field crops.

EWG mentioned the NASS database but chose not to examine the information. That's too bad because if they had, they would have discovered why pesticide use seems to have risen since 1993. Simply stated, if more acres are planted, then the probability of using more pesticide also increases. Crops like corn and soybeans are grown on so many acres that they would tend to inordinately influence aggregate use statistics when production is increased. Minor crops like potatoes rely heavily on soil fumigants and defoliants that have very large per acre application rates. Aggregate pesticide use statistics are meaningless to an understanding of pesticide trends. Rather, individual crops need to be studied.

Corn, soybean, and winter wheat account for more crop acreage than all other crops. Combined with

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

cotton and potato, these crops represent about 60% of all agricultural pesticide use. Combined production of corn, cotton, potato, and soybean increased 10 million acres between 1993 and 1996 (Table 1), even though winter wheat production declined by about 4 million acres. The corresponding increase in chemical usage was nearly 56 million pounds, accounting for almost 70% of the increase in usage claimed by EWG. Thus, the major reason aggregate pesticide use went up in 1996 can be accounted for by increases in land under production, not because of some policy failure nor lack of will to reduce use. Of course, changes in weather and pest pressure will cause yearly fluctuations in pesticide usage on any crop.

Table 1. Crop acres and pounds of pesticide used based on estimates from the USDA National Statistical Service.

	ACRES PLANTED (1000's)		POUNDS PESTICIDE USED (1000's)	
CROP	**1993**	**1996**	**1993**	**1996**
CORN	72,989	79,830	220,571	227,876
COTTON	13,324	14,355	53,092	61,013
POTATO	1,190	1,265	55,552	79,311
SOYBEAN	59,411	64,519	63,817	75,613
WINTER WHEAT	43,952	39,611	6,551	11,775
TOTAL	190,866	199,580	399,583	455,588

Do the increases in aggregate pesticide use mean that hazard has also increased as the EWG report implies? Investigation of the details of chemicals used reveals the absurdity of trying to equate aggregate pesticide use and hazard. For example, well over 90% of the pesticides used on corn and soybeans are herbicides with residues rarely found in food. Although insecticides account for about 29% of total pesticide use on cotton, most of the production goes for fiber which is not eaten. Use of sulfuric acid as a defoliant on potato jumped almost 10 million pounds between 1993 and 1996. But in the presence of water, sulfuric acid completely dissociates to harmless, natural sulfate ions and leaves no residue. The large increase in pesticide use on wheat despite the drop in production acreage can be accounted for by large increases in the use of glyphosate and 2,4-D, comparatively safe products easily available to the homeowner. In short, aggregate pesticide use statistics are very poor predictors of hazard.

Are Pesticide Residues in Food Increasing?

EWG analyzed pesticide residue data developed by the USDA Pesticide Data Program (PDP) and the Food and Drug Administration Regulatory Monitoring Program (FDA). Based on the PDP, EWG concluded that the average pesticide residue levels "have increased slightly on fruits and vegetables children consumed heavily, from 1993 through 1996." Based on the FDA data, EWG concluded substantial increases in residues. Despite the discrepancy between the two databases, which actually analyzed different foods, the idea of averaging together the residues of all chemicals to discern trends and make implications about hazards is toxicologically absurd. Each chemical has its own tolerance, ultimately based on different hazards both in degree and type. Thus, allowable application rates will be vastly different among chemicals, resulting in highly variable concentrations of residues. For example, the databases include post-harvest fungicides, which are generally much less hazardous than insecticides used on fruit but always leave residues 10 to 100 times greater. Making sense of pesticide residues can only be accomplished by comparing trends in residues of specific products.

For example, when I used the PDP to analyze trends in azinphos-methyl (Guthion) and chlorpyrifos (Lorsban) residues on apples (see AENews no. 146, June 1998), I found that average levels dropped nearly 50 and 75% respectively between 1992 and 1996. Considering that EWG has stated that 3 bites of an apple can expose thousands of children to "unsafe" levels of organophosphate insecticides, the good news about lower residues of Guthion and Lorsban should be celebrated, not hidden in aggregated averages for all pesticides.

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...Singing the Same Old Song—

More troubling than EWG's meaningless lumping together of residues from vastly different chemicals, is the observation that some of the data presented may be downright wrong. The most glaring example is a large jump in average pesticide residues shown for apples between 1993 and 1996. The data supposedly came from the PDP. The values for the average residues looked suspiciously high because I knew that most residues were present at only a small fraction of their tolerance level. I decided to test EWG's analysis by examining the trends in maximum residues found in apples by the PDP, reasoning that the average of all the array of individual residues cannot be higher than the average of the individual maximum residues. My analysis showed that the average maximum residue for all pesticides found on apples was 1.2 ppm in 1993, about the same level that EWG claimed was the average of all residues. In 1996, however, the average maximum residue had dropped to 0.58 ppm, whereas EWG showed the average of all residues to be nearly 1.6 ppm. Obviously, a serious discrepancy exits between our analyses. This exercise does illustrate why peer review of scientific reports is necessary to straighten out problems in handling data. EWG's conclusion that pesticide residues are increasing should be validated before being considered suitable for public use.

Is Water More Contaminated with Pesticide Residues Than Ever Before?

Any environmental analytical chemist worth their salt will tell you that pesticide residues exist in surface and ground water, although there are very big differences between regions. Just about any water collected in the Corn Belt will have atrazine residues, but insecticide residues are a rare sight. When insecticides are found, they are hundreds to thousands of times lower than regulatory standards, which themselves already have at least 100-fold safety factors built in.

Some claim that herbicide residues have been increasing in our waterways. Actually, what has increased is our ability to detect ever lower amounts of the residues that were always there. For example, one study showed that when atrazine detection levels were at 1-2 parts per billion, only 1-2% of the aquifers in Iowa were "contaminated" (Kolpin et al., 1995, J. Environ. Quality, v. 24, p. 1125). When detection limits were lowered to 3 parts per trillion, the number of "contaminated" aquifers jumped to 46%.

Does that mean contamination increased? No, because we now know that atrazine probably moved to those aquifers very rapidly, but our ability to see it improved a thousand fold. Is the hazard any greater now than before? No, because human exposure rates have been shown to be up to thousands of times less than what the regulations currently allow (Richards et al., 1995, Environ. Sci. & Technol., v. 29, p. 406). After more than 35 years of atrazine use, not one study has credibly proven any human hazard from drinking water.

The Devil Is In the Details

While EWG seems to be popular with the big media for juicy "facts" about pesticides, the organizations failure to delve into the details of the scattered pieces of data inhibit rather than help growers' efforts to manage their pesticide use. Careful examination of land use statistics, freely available to anyone on the internet, shows that pesticide use generally tracks planted acreage, but other influential factors include weather and pest outbreaks. The USDA PDP shows that for apples, which are recognized as an important children's food, average residues of the most widely used insecticides has been declining. Lumping all pesticides together obscures the true trends. Finally, we have known for a long time that water in the Corn Belt has seasonally high levels of herbicides. Residues are no greater now than over the last 25 years, but analytical detection limits now allow us to include ever smaller and smaller levels.

"The Same As It Ever Was…" perceives that things have gone from bad to worse and the Clinton Administration policies are a failure. While some may agree with the latter point, I'm hearing EWG singing the same old song.

Position Announcement

Applied Entomologist

Applied Entomologist; assistant professor. (75% Res/25% Ext), tenure track, 12-mo. appt. Starting date February 1, 1999. Location: Prosser, Washington (Washington State University, Irrigated Agriculture Research & Extension Center- WSU IAREC). Successful candidate to conduct research focused on, but not limited to, the biology of arthropod pests of hops, grapes (wine and juice), and possibly other crops to develop IPM strategies and innovative crop protection technologies. Person will be expected to develop and implement programs using new and existing technologies to maintain and enhance the national and international competitiveness of Washington agriculture. Person will be responsible for extending research results to growers, supporting agencies and industries, interested citizens, and the scientific community. Person will be expected to actively seek external funds, and supervise research assistants, graduate students, and post-doctoral associates as needed in the program. Person will be expected to provide written reports and oral presentations to supporting agencies and commodity groups, to interact with a broad clientele including pertinent commodities, private industry, governmental agencies, scientific organizations, producers, and individual citizens, and to publish in trade, technical, and extension publications and refereed journals. Person must be able to work independently as well as a member of interdisciplinary teams addressing cropping systems issues. *Required qualifications*: Ph.D with an emphasis in entomology; effective verbal and written communication skills; knowledge of principles and methods of integrated pest management in agroecosystems; experience with experimental designs, plot layout, sampling methods, and statistical analysis. *Highly desired qualifications*: Experience working with hops, grapes, and/or other perennial crops; experience communicating (written and verbal) and working with commodity groups and agricultural producers; experience in field investigation of arthropod biology, agrichemicals, IPM approaches (experimental design and implementation); demonstrated research skills (planning, conducting, and publishing) in entomology; demonstrated use and understanding of electronic communications and computer applications; experience in procurement and management of extramural funds for research; experience in administration of research and extension programs, and supervision/management of staff; demonstrated organizational skills and a capacity to interact with colleagues and clientele on teams, coalitions, and committees. Send a letter expressing interest and describing qualifications (address specially above points), CV, academic transcripts, and three requested letters of reference (have letters sent directly from source) to: Dr. Keith S. Pike, Search Committee Chair, WSU IAREC, 24106 N. Bunn Rd, Prosser, WA 99350 (ph. 509-786-2226; fax 509-786-9370; email kpike@tricity.wsu.edu). ***Application closing date:*** October 1, 1998. Salary competitive and commensurate with training and experience within the salary range of assistant professor at WSU. University contributes to medical, life, and salary continuation insurance options, plus retirement plans. *WSU employs only US citizens and lawfully authorized non-US citizens. All new employees must show employment eligibility verification as required by the US Immigration and Naturalization Service. The university is an Equal Opportunity/ Affirmative Action educator and employer. Members of ethnic minorities, women, Vietnam-era or disabled veterans, persons of disability, and/or age 40 or more are encouraged to apply.*

Container Collection Program

Washington Pest Consultants Association

Container Requirements

1. Must be rinsed, so that no residue remains.
2. Must be clean and dry, inside and out, with no apparent odor.
3. Hard plastic lids and slip-on lids must be removed.
4. Glue-on labels may remain.
5. The majority of the foil seal must be removed from the spout. A small amount of foil remaining on the container rim is acceptable.
6. Half-pint, pint, quart, one and two-and-a-half gallon containers will be accepted whole.
7. Five gallon containers will be accepted whole, if the lids and bails are removed.
8. 30 gallon and 55 gallon containers are now being accepted if they are cut into pieces no larger than 15 X 18 inches so that they will fit into the granulating machine.

****Containers that do not meet the above criteria cannot be accepted****

Container Collection Dates

Please put these dates on your calendar! Tell others about the program. 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. For more information about plastic pesticide containers contact: Clarke Brown (509) 965-6809 or Steve George (509) 457-3850.

Date Time	Site	Sponsor	Contact Phone	
Aug 4 **8am -12pm**	**Davenport Airport**	Western Farm Service	Lee Swain (509) 725-0111	
Aug 5 **8am - 12pm**	**Wilbur Airport**	Western Farm Service	Greg Leyva (509) 647-2441	Dennis Buddrius (509) 647-5394
Aug 18 **8am - 12pm**	**Wilbur - Ellis** **Eltopia**	Pac. NW Veg Assoc. & Wilbur-Ellis Co.	Vern Record (509) 297-4291	
Aug 19 **8am - 12pm**	**Moses Lake Air Service**	CBCCA & Cenex	Perry Davis (509) 765-7689	Heath Gimmestad (509) 765-5617
Aug 20 **8am - 12pm**	**Wilbur - Ellis** **Quincy**	Col Basin Veg Seed Assoc.	Dale Martin (509) 787-4433	Ron Turner (509) 787-3556
Aug 21 **8am - 12pm**	**Wolfkill** **Royal City**	Wolfkill Feed & Fertilizers Saddle Mtn Supply Simplot Soil Builders	Jerry Wolfkill (509) 346-2213 Mike Christianson (509) 346-2291	Kirsten Crossier (509) 346-2291

If you are interested in hosting an event at your farm, business, or in a central location in your area, contact Clarke Brown at (509) 965-6809 or Steve George at (509) 457-3850.

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 light-heartedly with the peculiarities that cross our paths and helps decipher the enigmatic and clarify the obscure. Questions may be E-mailed to Dear Aggie at dearaggy@tricity.wsu.edu. Opinions are Aggie's and do not reflect those of WSU.

Last month you joked that women caused more pollution than men because estrogen has been found in treated municipal sewage effluents at levels that can affect normal endocrine physiology in fish. Aren't men just as "dangerous" because of potential effects on fish from excessive testosterone exposure?

Perhaps the reader thought Aggie was showing bias in picking on women, but the truth of the matter is that studies of testosterone concentrations in treated effluents have not been published. While any compound that would mimic testosterone would be considered today as a potentially endocrine disrupting chemical, most compounds studied have mimicked estrogen. One notable exception is DDE, the main breakdown product of DDT that is stored in fat tissue. DDE is now considered anti-androgenic, which is a fancy word for a chemical that blocks the normal action of testosterone (which is classified as an androgenic hormone). The testosterone receptor recognizes DDE as if it were testosterone, but instead of turning on its normal complement of genes, DDE just sits on the receptor blocking testosterone from attaching. Thus, excessive levels of DDE actually act as if a male has been given too much estrogen, causing the reproductive tissues to have female-like characteristics. We need not panic yet about the possible loss of males from our species. The levels of DDE required to cause the anti-androgenic effect are absurdly high. Whether testosterone is in the environment and can cause adverse physiological effects just has not been studied yet. However, Aggie proposes an experiment. On the day of the next SuperBowl, pregnant fish should be caged and placed in the effluent of municipal sewage treatment plants. Aggie's betting on a very high ratio of male fish among the offspring. (Information about DDE from Kelce et al., 1995, Nature v. 375, pp. 581-585)

Of all the bad heath effects attributed to chemicals, cancer has been at the top of the list. I continually read in the newspaper that cancer rates are increasing, especially among children. Where do these statistics come from and what do they really tell us?

Cancer is a hot button for good cause. An individual is estimated to have a 25-33% chance of contracting cancer in their lifetime. Thus, knowing someone with some type of cancer is very probable. Certain advocacy groups feel that synthetic chemicals, and especially pesticides, have contributed greatly to increasing incidence of cancer, but epidemiologists do not agree. Cancer statistics (incidence and mortality) are collected by the National Cancer Institute (NCI) Surveillance, Epidemiology, and End Results (SEER) program. The database represents about 9.5% of the U.S. population. During the spring of 1998, NCI in cooperation with The American Cancer Society and The Centers for Disease Control released a report about cancer incidence and mortality between 1973 and 1995. Aggie is pleased to bring some good news to our readers. Both the incidence and mortality rate for all cancers actually declined between the years 1990-1995. Sharp reductions in lung cancer rates were a major factor in the decline. However, the incident rate of other prevalent cancers like breast and prostate either showed no increase or declined slightly. Certain environmental health specialists had been hypothesizing that exposure to endocrine-disrupting chemicals may be a causal factor in the large increases in breast and prostate cancer recorded during the 1973-1995 period. An alternative hypothesis propounded by the NCI involves a jump in incidence of cancers when a new screening procedure is available. Thus, with the advent of mammography and the PSA (Prostate Specific Antigen) test, came higher rates of detection of non-malignant or slow growing cancers that were already at high levels but not detected previously. The good news even applied to children under 15 years old; their cancer incidence rate dropped 1.2% per year between 1990 and 1995. The cancer statistics will continue to be issued as an annual report card. Stay tuned. (Source: Wingo et al., 1998, Cancer, v. 82, pp. 1197-1207).

So Long, It's Been Good to Know Ya

Dr. Carol Weisskopf, Analytical Chemist, WSU

Eric Bechtel has been the blue pencil behind the voice of the Food and Environmental Quality Laboratory and the Pesticide Information Center for 3 years. Most prominent of his duties was as editor of the AENews. He also edited many of the program's publications, including crop assessments and updates to the Washington Minor Crop Handbook. Eric and his family have returned to Pullman, where he has accepted a challenging new position. I personally believe that, after many years of struggling along with a 486 PC, getting a new top-of-the-line Macintosh was too much for him to take.

All of us at FEQL trusted his editing completely. You may perhaps have noticed that Allan Felsot can occasionally seem a bit opinionated. Eric edited newsletter articles with such skill that even Allan gave him free rein. His editing helped give readers the impression that we were smart enough to do more than tie our shoes.

This is our first (and I hope last) newsletter without an editor's hand on the helm. We expect it to still be pretty, since the word processing, web publishing, printing and other presentation activities are being ably handled by Judy Ruppert. She has had her Macintosh for quite a while, so overcame any shock at its behavior before becoming involved in our newsletter publishing. Any problems with content are, however, our fault. At this point, we've been reduced to editing each other, and walking around with our shoes untied. While I have a pretty good vocabulary, my grammar is atrocious and I can't spell at all. Allan is great at content but a bit verbose. Catherine Daniels, managing editor, is out managing like mad, getting us a new editor as soon as possible.

Eric – when you get a copy of this, you can use it like the Sunday crossword puzzle. Write all over it, snicker at our mistakes, and know we miss you.

PNN UPDATE

Jane Thomas, Pesticide Notification Network Coordinator, WSU

The PNN is operated by WSU's Pesticide Information Center for the Washington State Commission on Pesticide Registration. The PNN system is designed to distribute pesticide registration and label change information to groups representing Washington's pesticide users. The material below is a summary of the information distributed on the PNN in June.

Our office operates a web page called PICOL (Pesticide Information Center On-Line). This provides a label database, status on registrations, and other related information. PICOL can be accessed on URL http://picol.cahe.wsu.edu or call our office, (509) 372-7492, for more information.

Federal Issues

Section 18 Specific Exemptions

On May 29, 1998, EPA approved a Section 18 emergency exemption (file symbol 98-WA-21) for the use of Rally 40W to control powdery mildew on mint. This exemption is for use on 11,225 acres in Adams, Benton, Clark, Franklin, Grant, Kittitas, Lincoln, and Yakima counties.

On May 29, 1998, EPA granted a Section 18 emergency exemption (file symbol 98-WA-34) for the use of the fungicide Folicur 3.6F to control wheat stripe rust and leaf rust on wheat. This exemption allows for the treatment of 500,000 acres of wheat in Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Skagit, Spokane, Stevens, Walla Walla, Whitman, and Yakima counties. This exemption expires 7/7/98.

On June 8, 1998, EPA issued a Section 18 emergency exemption (file symbol 98-WA-19) for the use of Platte's herbicide Starane EC on field corn. This exemption is for use on a maximum of 50,000 acres in Adams, Benton, Franklin, Grant, Kittitas, Klickitat, Lincoln, Skagit, Spokane, Walla Walla, Whatcom, and Yakima counties. This exemption expires on August 1, 1998.

On June 8, 1998, EPA granted a specific exemption for the use of the unregistered product Aphistar 50 WP to control root aphids on true fir Christmas trees. This exemption is for use on 25,000 acres and expires October 31, 1998.

State Issues

New Registrations

WSDA has issued a new registration to Church & Dwight for its fungicide Armicarb 100. This product is registered for use on: acorn squash, apples, apricots, alfalfa, barley, bell pepper, blueberries, cabbage, cantaloupe, cherries, cucumber, grapes, hops, honeydew, lettuce, mango, muskmelon, peaches, pears, peas, plums, potatoes, prunes, pumpkin, strawberries, sugarbeets, summer squash, sweet potatoes, tomatoes, watermelon, wheat, and zucchini. The product is used to control alternaria leaf spot, anthracnose, botrytis, downy mildew, fusarium leaf spot, leaf spot, phoma, phytophthora, and powdery mildew.

Section 18 Crisis Exemptions

On June 2, 1998, WSDA issued a Section 18 crisis exemption for the use of Savey 50WP to control twospotted spider mites on hops. This exemption expires August 15, 1998.

On June 15, 1998, WSDA issued a Section 18 crisis exemption for the use of Gramoxone Extra for the desiccation of weeds in both dry peas and green peas grown for seed. This exemption expires November 10, 1998.

On June 22, 1998, WSDA issued a Section 18 crisis exemption for the use of Folicur 3.6F to control powdery mildew on hops. The crisis exemption covers use on 32,214 acres of hops in Benton and Yakima counties and expires 10/1/98.

Section 24c Registrations

On June 1, 1998, WSDA issued SLN WA-980021 to Nichimen America for the use of Kaligreen Potassium Bicarbonate Soluble Powder to control powdery mildew on hops. This SLN expires 12/31/98.

On June 1, 1998, WSDA issued SLN WA-980020 to Griffin for the use of its insecticide Declare to control various insects on peas. This SLN is a "me-too" registration identical to SLN WA-970034 issued for the use of Cheminova Methyl 4EC. This SLN expires December 31, 1998.

On June 2, 1998, WSDA issued SLN WA-980003 to Platte Chemical for the use of Trifluralin HF to control weeds in clover seed crops. This SLN is being issued as a replacement for SLN WA-970009 that had been issued for Trifluralin 4EC. The change is necessary because Platte is now marketing Trifluralin HF in place of Trifluralin 4EC. This SLN expires December 31, 1998.

On June 13, 1998, WSDA issued SLN WA-980004 to Bayer for the use of its insecticide Di-Syston 15% Granular to control clover head aphids and mites on clover grown for seed. This SLN expires 12/31/98.

On June 24, 1998, WSDA issued SLN WA-980022 to JMS Flower Farms for the use of its insecticide/fungicide, Stylet Oil, on hops to control powdery mildew. This SLN is issued for use in eastern Washington and it expires December 31, 1998.

Section 24c Cancellations

On June 2, 1998, WSDA issued a letter canceling SLN WA-820001. This SLN had previously been issued to Rhone Poulenc for the use of Weedone 170 Woody Plant Herbicide for forest management

...PNN Update

brush control. The SLN is being cancelled because Rhone Poulenc no longer manufactures this product.

On June 2, 1998, WSDA issued a letter canceling SLN WA-950027. This SLN had previously been issued to Zeneca for the use of its product Warrior to control various insects in alfalfa grown for seed. Zeneca requested the cancellation because they have issued a supplemental label that provides for this use.

On June 2, 1998, WSDA issued a letter canceling SLN WA-930012. This SLN had previously been issued to Zeneca for the use of its herbicide Diquat as a vine desiccant to facilitate harvesting potatoes. Zeneca requested the cancellation because these use directions are now included in the main product label. However, be aware that the main label use directions differ from those of the SLN. The SLN had allowed for a single application of 2 pints per acre. The Section 3 product label allows for the use of 1 pint per acre with a second application if necessary.

On June 2, 1998, WSDA issued a letter canceling SLN WA-780030. This SLN had previously been issued to Zeneca for the use of its herbicide Ro-Neet 6E, through chemigation, to control weeds in sugarbeets. Zeneca voluntarily requested cancellation of this SLN because these use directions are now included in the main product label.

On June 2, 1998, WSDA issued a letter canceling SLN WA-920046. This SLN had previously been issued to Zeneca for the use of its insecticide Dyfonate 4EC on broccoli, Brussels sprouts, cabbage, and cauliflower seed crops. Zeneca voluntarily requested cancellation of this SLN because the company is no longer marketing this product.

On June 2, 1998, WSDA issued a letter canceling three Zeneca Vapam SLNs. The SLNs (WA-960010, 830007, and 930022) were all previously issued to Zeneca for the use of its soil fumigants Vapam and Vapam HL SLNs WA-960010 and 930022 were for the use of both products to control specific replant disease in fruit orchards. SLN WA-830007 was issued for the use of Vapam Soil Fumigant in Irish potatoes. Zeneca voluntarily requested cancellation of these SLNs because Amvac Chemical Corporation purchased the Vapam registrations from Zeneca. These SLNs have been replaced by WA-970015, 970016, and 970017 issued to Amvac Chemical.

On June 2, 1998, WSDA issued a letter canceling SLN WA-940012. This SLN had previously been issued to Zeneca for the use of its insecticide Dyfonate II 15G on asparagus. Zeneca voluntarily requested cancellation of this SLN because the company is no longer marketing this product.

Section 24c Revisions

On June 3, 1998, WSDA issued a revision to SLN WA-960001. This SLN was previously issued for the use of Lexone DF to control broadleaf weeds in succulent peas grown in western Washington. The revision includes the addition of a statement identifying the product as a state restricted use pesticide.

On June 3, 1998, WSDA issued a revision to SLN WA-960004. This SLN had previously been issued to Cheminova for the use of its insecticide Fyfanon ULV to control grasshoppers in cottonwood and hybrid poplar plantations. The changes include revising the worker protection statement, the chemigation statement, deleting the REI statement, the pollinator protection statement and removing the expiration date.

On June 3, 1998, WSDA issued a revision to SLN WA-970034. This SLN had previously been issued to Cheminova for the use of its insecticide Cheminova Methyl 4EC to control various insects on peas. The changes include revisions to the worker protection standard statement, the pollinator protection statement, and deleting the REI.

Jane Thomas, Pesticide Notification Network Coordinator, WSU

On June 2, 1998, WSDA, issued a revision to SLN WA-950002. This SLN had previously been issued to Gowan for the use of its insecticide Metasystox-R to control aphids and mites on peppermint and spearmint. The changes include the addition of both chemigation and pollinator protection statements, revision of the precautionary statement, and the removal of the expiration date.

On June 2, 1998, WSDA issued a revision to SLN WA-940017. This SLN had previously been issued to Gowan for the use of its fungicide Botran 75W to control blight on container, bareroot, and greenhouse grown nursery stock. The changes made include revising the precautionary statement and adding a chemigation statement.

On June 2, 1998, WSDA issued a revision to SLN WA-950003. This SLN had previously been issued to Gowan for the use of its insecticide Metasystox-R to control filbert aphids on filberts. The changes include revising the precautionary statement and adding a pollinator protection statement.

On June 12, 1998, WSDA issued revisions to two SLNs previously issued for the use of Drexel dimethoate products to control aphids and lygus bugs on lentils. The revisions are summarized below:

WA-880016 Drexel Dimethoate 4EC
Revision: Added Worker Protection Statement reference to the statement requiring that the user follow the EPA label, removed environmental hazard, PPE, and pollinator protection statements.

WA-960031 Drexel Dimethoate 2.67
Revision: Added Worker Protection Statement reference to the statement requiring that the user follow the EPA label, added a statement prohibiting chemigation, removed environmental hazard and pollinator protection statements.

On June 12, 1998, WSDA issued a revision to SLN WA-890011. This SLN had previously been issued to Drexel for the use of its herbicide Diuron 4L to control weeds in perennial bluegrass grown for seed in eastern Washington. The revision added a Worker Protection Statement reference to the statement requiring that the user follow the EPA label, added a state Restricted Use Pesticide statement, and added a chemigation prohibition statement.

On June 19, 1998, WSDA issued revisions to both SLN WA-970005 and 970006. These SLNs had previously been issued to Drexel for the use of its dimethoate products on cherries. SLN WA-970005 provides for the use of Dimethoate 2.67 while WA-970006 is for the use of Dimethoate 4EC. Both SLNs have been revised to: add a WPS reference to the statement requiring the user to follow the main label, remove the expiration date, and change the pollinator protection statement.

Tolerance Information

Chemical (type)	Federal Register (date/page)	Tolerance (ppm)	Commodity (raw)	Time-Limited Yes/No	Time-Limited new or extension	Time-Limited expiration date
azoxystrobin (fungicide)	6/5/98 page 30636	1.00	parsley, dried	Yes	New	6/30/99
		0.50	parsley, fresh			
Comment: This time-limited tolerance is issued in response to EPA granting a Section 18 for the use of azoxystrobin on parsley in Ohio.						
polyvinyl chloride (CAS Reg. No. 9002-86-2) (inert)	6/10/98 page 31642	exempt	growing crops or raw agricultural commodities after harvest	No	n/a	n/a
glyphosate (herbicide)	6/10/98 page 31631	5.00	peas, dry	Yes	Extension	2/29/00
		5.00	chickpeas			
		5.00	lentils			
Comment: These time-limited tolerances are issued in response to EPA again granting a Section 18 for the use of Roundup Ultra and Roundup RT on chickpeas, dry peas, and lentils in Idaho, Oregon, and Washington.						
chlopyralid (herbicide)	6/10/98 page 31640	3.00	canola	Yes	Extension	3/31/00
Comment: This time-limited tolerance is issued in response to EPA again granting a Section 18 for the use of chlopyralid to control perennial sowthistle and Canada thistle in canola in North Dakota, Minnesota, and Washington.						
fenbuconazole (fungicide)	6/10/98 page 31633	1.00	blueberries	Yes	New	12/31/99
Comment: This time-limited tolerance is issued in response to EPA granting a Section 18 for the use of fenbuconzole on blueberries in many states.						
propamocarb hydrochloride (fungicide)	6/12/98 page 32134	0.50	potato	Yes	Extension	see below
		0.10	milk			9/15/00
		0.10	cattle; fat, meat, mbp (except kidney and liver)			9/15/00
		0.10	goats; fat, meat, mbp (except kidney and liver)			9/15/00
		0.10	hogs; fat, meat, mbp (except kidney and liver)			9/15/00
		0.10	horses; fat, meat, mbp (except kidney and liver)			9/15/00
		0.10	sheep; fat, meat, mbp (except kidney and liver)			9/15/00
		0.50	tomatoes			11/15/00
		3.00	tomato paste			11/15/00
		1.00	tomato puree			11/15/00
Comment: These time-limited tolerances are extended in response to EPA again granting Section 18's for the use of propamocarb hydrochloride to control late blight in potatoes and tomatoes in many states.						
phospholipid: Lyso-PE	6/12/98 page 32131	temporary exemption	apples, citrus, cranberries, grapes, nectarines, peaches, pears, strawberries, and tomatoes	Yes	New	6/1/01
Comment: This temporary exemption is granted in support of an experimental program that will be conducted in Arizona, California, Florida, Massachusetts, Michigan, Ohio, Washington, West Virginia, and Wisconsin.						

Jane Thomas, Pesticide Notification Network Coordinator, WSU

Chemical (type)	Federal Register (date/page)	Tolerance (ppm)	Commodity (raw)	Time-Limited		
				Yes/No	new or extension	expiration date
dimethomorph (fungicide)	6/12/98 page 32138	0.05	potato	Yes	Extension	3/15/00
Comment: This time-limited tolerance is issued in response to EPA again granting Section 18s for the use of dimethomorph to control immigrant strains of late blight in potatoes in many states.						
quizalofop-p ethyl ester (herbicide)	6/16/98 page 32753	1.50	canola, meal	No	n/a	n/a
		1.00	canola, seed			
		2.00	peppermint, tops			
		2.00	spearmint, tops			
buprofezin (insecticide)	6/19/98 page 33583	0.03	milk	Yes	Extension	7/31/99
		0.02	fat			
		0.50	mbp			
		0.02	meat; cattle, sheep, hogs, goats, and horses			
		0.02	fat; cattle, sheep, hogs, goats, and horses			
		0.50	mbp; cattle, sheep, hogs, goats, and horses			
Comment: These time-limited tolerances are extended in response to EPA again granting Section 18's for the use of buprofezin to control whitefly in cotton in both California and Arizona and red scale in citrus in California.						
fludioxonil (fungicide)	6/24/98 page 34304	5.00	apricot	Yes	New	12/31/99
		5.00	nectarine			
		5.00	peaches			
		5.00	plums			
Comment: These time-limited tolerances are issued in response to EPA granting Section 18's for the use of fludioxonil on stone fruit in California, Georgia, and South Carolina.						
tebufenozide	6/24/98 page 34310	0.50	grapes, wine	No	n/a	n/a
		1.00	pears	Yes	New	12/31/01
Comment: This time-limited tolerance is being issued to allow the use of tebufenozide on pears under an experimental use permit.						

In the June 24 Federal Register EPA published two corrections to notices announcing that hydrogen peroxide and peroxyacetic acid were exempt from the requirement for a tolerance. These notifications, when previously published /98 pages 24955 and 24949), each inadvertently omitted the usage site vegetable from the notification. (6/24/98 page 34303 and 34