

## Annual Operation Report of the Pesticide Use Report Workgroup

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### 1. Activity list:

A steering committee was established to plan and guide the activities for the workgroup in the fall of 2002. The steering committee consists of a diverse group of 8 members from UC, state agencies, and commodity boards. The steering committee met in the fall of 2002 at UC Davis to discuss ANR high priority issues and plan the first meeting of the workgroup. The steering committee meeting minutes (Meeting Minutes 1) show the details of the plan. Subsequent discussions among the steering committee were conducted via email and telephone.

The first workgroup meeting announcement was sent out in late December and early January. On February 4, 2003, the inaugural workgroup meeting was held at UCD. Meeting minutes (Meeting Minutes 2) summarize the details of the meeting.

After the workgroup meeting, the steering committee met again to plan a second meeting for October 2003. As of April 2003, the agenda and speakers for this meeting are almost finalized. Benefits of the workgroup included the following: 1) providing a forum for the members to interact and exchange methodology about how to best use the PUR data for pest management and environmental impact assessment; 2) getting to know other people who have struggled with using PUR data; 3) promoting new applications of the PUR; 4) generating ideas of how to better use the PUR for pest management; and 5) encouraging members to work together.

#### Meeting Minutes 1 - RE: Steering Committee Meeting Minutes

Attendees: Jenny Broome, Joe Browde, Lynn Epstein, Gary Obenauf, Steve Quashnick, Joyce Strand, John Steggall, Larry Wilhoit, Minghua Zhang.

Date: October 11, 2002

Place: Rm 220, Veihmeyer Hall

Following the scheduled agenda, the group discussed the importance of initiating the workgroup on the PUR and some areas of the PUR that would be of interest to the larger pest management community. It was decided that the focus of the workgroup should be on the data analysis. The group also discussed potential topics regarding data accessibility and data quality.

The group agreed to pursue a PUR workshop using the current funding. The meeting is tentatively scheduled for February 4 or 6, depending on the availability of rooms in the Alumni Center, or in the DANR's building.

The format of the workshop will be a presentation-discussion. We plan to invite 3 or 4 speakers to give talks on how they have used the PUR for their studies. We also plan to invite a few PUR experts to form a panel for a discussion. We will provide a space for displaying posters for other people who are interested in sharing their work with the group.

Rough ideas for the next round proposal were discussed. Lynn and Minghua will work together to come up with a draft and then to distribute to the group for further input.

Although there was much discussion on data quality, the group agreed that the PUR is still worthy of analysis and that energy should be focused on making the best use of the database, especially for inter-disciplinary research.

A possible website for the workgroup can be developed if the workgroup is ratified next year to share the information on data accessibility, data quality and research projects that use the database.

Although this should be a UC workgroup, the group feels that the workgroup should include people from agencies and from outside of the UC. At the same time, the group will try as much as possible to include many ANR people.

Actions from the meeting:

1. Minghua will work with Lynn to write the meeting minutes and then to distribute to the group for further input.
2. John Steggall will contact Department of Health Service researchers to see if they are willing to present their study at the workshop.
3. Everyone will think about the overall objectives of the workgroup and identify research projects.

### **Meeting Minutes 2 – RE: February 4, 2003, PUR Workgroup -- Notes**

The sign-up sheet indicated 50 people attended the meeting. Attendees were from UC Davis, UC Berkeley, UC Riverside, California Department of Pesticide Regulation, California Department of Food and Agriculture, State Water Resource Control Board, Regional Water Resource Control Board, State Air Quality Control Board, a County Agriculture Commissioner, Pesticide Action Network, California Alliance for Family Farmers, a Valley? Non profit organization, and winegrape growers. UC people included professors, specialists, farm advisors, technicians, and graduate students. We had positive feedback about the meeting. Thanks to the steering committee for the hard work on this event. Thanks to John Steggall for taking the notes for the meeting.

#### **1. Morning Presentations Session**

Dr. Larry Wilhoit presented “Methods for assessing data accuracy in the PUR using DPR’s pesticide sales database, agricultural census data from County Agricultural Commissioners’ Offices, and Department of Food and Agriculture, and USDA Agricultural Statistics. If averaged over years, NASS data is what you’d expect compared to the PUR. Considering the USDA data are from surveys, it is not surprising that it fluctuates to a greater extent from year to year, both higher and lower than the PUR data, depending on years. About 13% of records for 1998 had rates greater than maximum label rates (from CDFA label database). Most rates of use were comparable to pesticide label rates. Errors in the PUR can be in pounds applied or acres treated. The criterion used to identify outliers and the percentage of records affected were as follows : greater than 200 lbs/acre (0.02%); 50 lbs/acre median (0.11%); and by a neural network procedure (0.39%). Estimates of acres planted (without any data correction) via the CDFA vs. CAC vs. PUR for orchard crops were in good agreement. However, other crops, e.g. strawberry show errors in the acres planted.

Dr. Lynn Epstein presented “Correlating pesticide use with new IPM practices”. Pesticide use trends indicate that there is not much of a case for use reduction of pesticide use or risk since the PUR began, particularly for plant diseases and herbicide use. Lynn and Susan use a slightly different set of data cleaning procedures, including error checking for area planted, than Larry does. Biopesticide use is very low. Some growers tried biopesticides but often abandoned their use after a year or two. In an example of a biocontrol agent on pears, there was no correlation of use of low-risk biopesticides with less use of traditional pesticides -- growers used new products in addition to older materials. In the example of powdery mildew of grapes, an environmentally driven IPM model may not promote less usage of pesticides statewide because most growers are currently using less than recommended by either a calendar spray or the environmentally driven model. Growers quickly adopt use of new fungicides. Pheromone usage has gone up dramatically. In the case of OP vs. pyrethroid use on almonds and stone fruits, pyrethroids have replaced OPs. Stone fruits have simply switched to from OPs to pyrethroids, but almond growers have replaced some OP use with less “environmentally disruptive” practices. UC researchers appear to have assumptions about pesticide use that are not supported by PUR data, e.g., that growers are currently using UC pest management guidelines faithfully, and that UC contact with growers represents a random sample of growers, etc.

Dr. Martha Harnley presented “Epidemiological studies using the PUR.” They are trying to determine if there is a correlation between health problems and air pollution from pesticides. She used PLSS, PUR, & US Census blocks in case-controlled or cohort studies. Resolution of PUR data is per section - this is a limiting factor. She used toxic air contaminant (TAC) data from DPR and examined chlorpyrifos, diazinon, & household dust levels. She also included weather variables in her study. The regression analysis concluded that correlations exist between usage & air concentrations. Here data indicate that the PUR is useful in such studies.

Dr. Minghua Zhang presented “Some examples in pest management using PUR.” Examples include OP use and the alternative pesticides on almonds and prunes. OP use declined in both crops and the other alternatives increased in the last decade. She also showed large variations in using OPs and other pesticides in pest management. The

message is to get the information back to the growers so the grower community may help to explain why the large variation of use existed and how we can use the variation to encourage the reduction of highly toxic pesticides. The PUR is a powerful tool to track the history of pest management and to understand past pest management practices.

Mr. Steve Orme talked about the development of the PUR on the web. He also shared insights on working with the PUR and the assessment of data quality and how to go about it.

Dr. Donald Weston from UCB talked about pyrethroid detection. He used the PUR to choose the top 5 counties for pyrethroid use. The PUR also provided info on month of greatest use of the pesticide on crops, etc. He focused his study by examining areas near lettuce, alfalfa, and almond production, in four counties (Stanislaus, Sutter, Fresno, & Madera) for the Feather River & San Joaquin River, some creeks, & sloughs. He looked at permethrin, esfenvalerate, bifenthrin, lambda cyhalothrin, DDT, etc. Tailwater ponds & drainage ditches had the highest concentrations. He also did bioassays with aquatic zooplankton and looked at absorption in the gut of a marine worm. Pyrethroids were detected at (down to) 1 ppb at 16 of 17 sites at ranges of < 1 ppb - 507 ppb.

2. Comments from the group discussion for the workgroup proposal:

Additional Objectives to be considered:

- \* Make PUR useful to growers & regulatory agencies
- \* Consistent tools for extraction & analysis
- \* Encourage counties to standardize data
- \* Familiarize group members about data

Approaches:

- \* Outreach to growers (magazines, web, etc)
- \* Possible conference
- \* More general publicity
- \* Get more County Agricultural Commissioner (CAC) participation
- \* What about newsletter costs (may be better to stick with web -- save \$\$)
- \* EPA funding may require narrower focus

3. Panel discussion and question-answer session with Ada Scott, Larry Wilhoit and John Steggall – In general, the questions were focused on the data availability and the analysis. Many questions regarded GIS PUR reporting and the county's land use GIS data.

4. Steering committee comments and discussion:

Concerns about the UC workgroup budget cuts.

It is agreed by the committee that we should organize another workgroup presentation meeting like this so that we can still have a forum to communicate about the use of the PUR. We will seek other funding possibilities if the UC workgroups budget is cut. We plan to have the meeting in October.

The committee agreed to use the available money to develop a website of PUR topics. Minghua will work with Joyce to find a student who can gather the information and Joyce will put the content on the website for us.

## **2. Accomplishments:**

DPR's pesticide use report (PUR) system is the largest and most complete database on pesticide use in the nation. Through the workgroup, members got to know each other and to learn new methods for using the PUR for various goals e.g. promoting integrated pest management, identifying successful alternative pest management systems, promoting reduced-risk pesticides, protecting endangered species, and establishing use limits for some pesticides in air and water, as well as protecting human health.

The workgroup also provided a means for researchers to confront a variety of data quality problems and to understand and resolve these issues. The workgroup facilitated use of the PUR within UC by promoting a shared understanding of the database's problems and potentials. The

workgroup also facilitated collaboration among UC researchers, state agencies and commodity boards.

A website regarding the PUR was established for members to share information. A discussion forum will be developed on the website to promote the discussion and to share research related information. The website URL is <http://agis.ucdavis.edu/pur>. The meeting agenda and meeting minutes were posted on the website as well as other relevant information.

The workgroup generated enthusiasm for working together on the PUR. The workgroup has also prioritized activities to be pursued by the workgroup. These areas include discussion of specific measures of pesticide use (pounds active ingredient applied, acres treated, number of applications, weighted index of use, and other potential measures of pesticide use) and the impacts of using the different measures for various purposes.

The workgroup provides a linkage for members to collaborate on PUR related projects and to publish PUR analysis and methodology together.