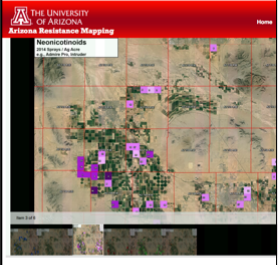
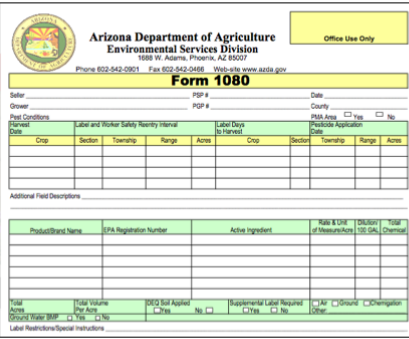
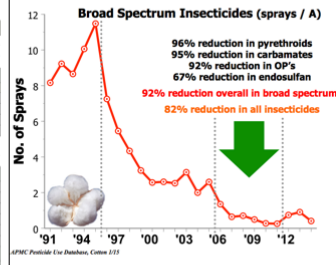


## Pesticide Use Data Benefits Arizona Agriculture










**Broad Spectrum Insecticides (sprays / A)**

- 96% reduction in pyrethroids
- 95% reduction in carbamates
- 92% reduction in OP's
- 67% reduction in endosulfan
- 92% reduction overall in broad spectrums
- 82% reduction in all insecticides

Helena Desert Agronomy Meeting, Feb 15 2017

**Hello everyone, I'm Al Fournier with UA Cooperative Extension, I work out of the Maricopa Agricultural Center. I want to thank David and the program planners for inviting me. I'm a first timer at this meeting and very glad to be here.**



## Outline

- **Pesticide Use Data provides great benefits to the agriculture industry**
- **We respect and protect your data**
- **Better pesticide use data means better information and resources for your industry**

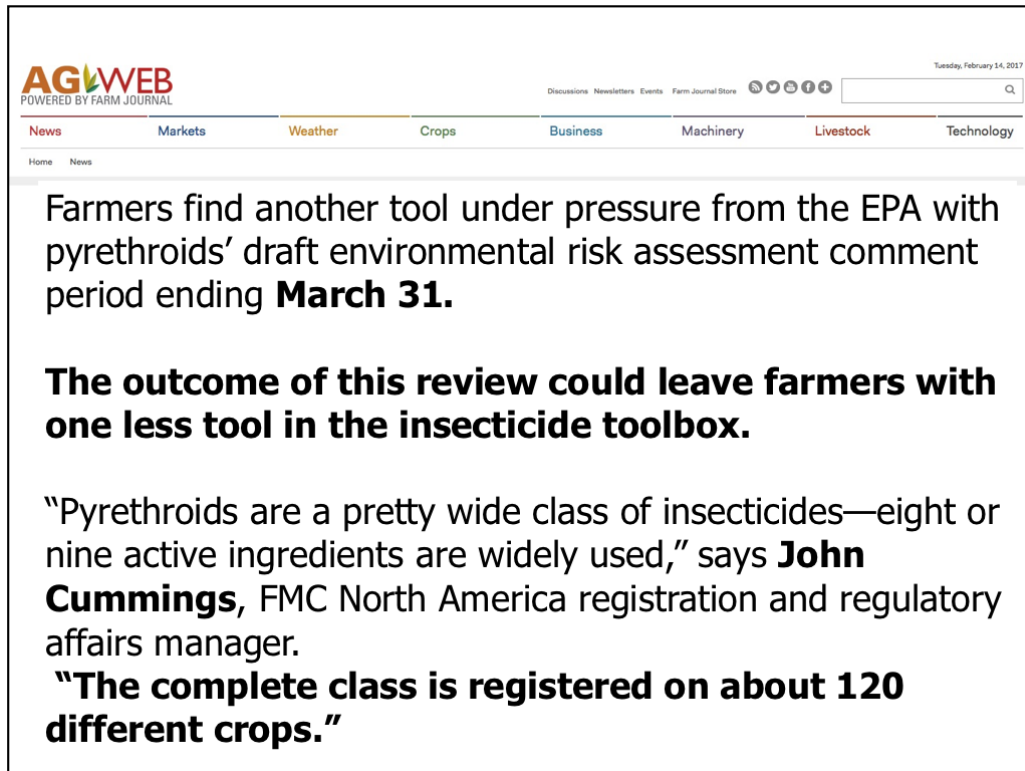
**I am going to go traditional and start with an outline of my talk. I really have 3 main points.**

**First, that the PUD that growers, PCAs and applicators submit to ADA provides great benefits back to the AZ agriculture industry. I will provide some examples of how the data are used.**

**My second point is that we respect and protect these data. The information is submitted to ADA for regulatory purposes, and we view these data as belonging to the agricultural community. And I will explain how we protect the data.**

**Finally, my thesis is that the more we can improve the PUD, the more complete and correct those data are,**

**the better products, tools and resources we  
can provide back to you.**



**This is a screen shot from the AgWeb farm journal website. This came out a few weeks ago, on Jan 24. I am hoping many of you are already aware of this. EPA is currently reviewing the pyrethroid class of insecticides, many different AIs, many of which are used extensively in Arizona agriculture. There are draft environmental risk assessments for these, for which EPA is accepting public comments until March 31.**

**These risk models that EPA develops have to be based on certain assumptions about how much of a chemistry is used in each crop. When EPA lacks detailed data on a pesticide's use, their models**



**assume maximum use rates, maximum number of times, on all registered crops. This is the “worst case scenario”. Of course, this is generally going to greatly overestimate the environmental risks because it overestimates chemical use.**

**Here are some quotes from the article on the webpage.**

## **Active Ingredients under review (partial list)**

- Bifenthrin
- Cyfluthrins (& beta)
- Cypermethrin (alpha & zeta)
- Cyphenothrin
- Esfenvalerate
- Gamma-cyhalothrin, Lambda-cyhalothrin
- Permethrin
- Pyrethrins

**Here is a list of some of the most prominent pyrethroid Ais that are included. Many of these of course see a very significant amount of use across several AZ crops. This is not a complete list.**

## AZ Reported Pyrethroid Use (2012-16)

Crop	Mean acres
ALFALFA	257,942
LETTUCE, HEAD	101,911
LETTUCE, LEAF	68,016
COTTON	44,696
LETTUCE, ROMAINE	23,017
BROCCOLI	18,239
CORN, UNSPECIFIED	15,643
SPINACH	15,258
CORN, FIELD	12,180
CAULIFLOWER	10,143
CANTALOUPE	9,692
CABBAGE, UNSPECIFIED	9,654
CELERY	3,010
MELON, UNSPECIFIED	2,894
PECAN	2,476
CORN, GRAIN	2,288
POTATO	2,267

Source: APMC Pesticide Use Database, Feb 2017

**This table was created from our Pesticide Use Database. This is showing only the top 16 or 17 crops in terms of the mean # acres sprayed each year between 2012 through 2016. So, for the past 5 years, these are average acres sprayed. You can see how diverse the list of crops is. Note that because of the way crops are named in the database, you might want to combine some of these numbers to see the full number of acres treated, for example for all lettuces. These are only the top ones. The full list includes over 100 crops potentially impacted.**

**Also, I want to point out that we already have and are making use of 2016 data in this table. At times, ADA**

**gets behind on data entry, but they have been working very hard to improve their process and get us close to having almost “real time” data in our database.**

## **Pyrethroid Comment Options Due: Mar 31**

e-mail your comments to:

**Rosaura Conde** at [conde.rosaura@epa.gov](mailto:conde.rosaura@epa.gov) and copy  
**Garlad Walekp** at [waleko.garland@epa.gov](mailto:waleko.garland@epa.gov)

Submit comments through **Pyrethroid Working Group**  
[www.votervoice.net/PWG/campaigns/48706/respond](http://www.votervoice.net/PWG/campaigns/48706/respond)

**Arizona Pest Management Center** will also prepare  
comments. Contact **Al Fournier** [520-374-6240](tel:520-374-6240),  
[fournier@cals.arizona.edu](mailto:fournier@cals.arizona.edu)

[www.regulations.gov/docket?D=EPA-HQ-OPP-2010-0480](http://www.regulations.gov/docket?D=EPA-HQ-OPP-2010-0480)

**This screen shot is from the Regulations.gov website. This is the official portal for submitting comments to EPA. Note that it says "Comment Period Closed". At the moment, you can not submit comments on the website, even though I have told you the deadline has been extended until Mar 31. This has to do with the transition to the new administration. This page is specifically for Lambda-Cyhalothrin (each AI has its own "docket"). It is possible to comment on any one of these Ais separately, or to comment on pyrethroids in general. In my next slide, I present some suggestions for effective comments. Here I want to tell you more about your comment options.**

**Because you cannot currently comment on the Regulations website, here are 3 options to submit comments, if you are interested.**

**There is an industry pyrethroid working group. This is their webpage. They have specific guidance there on the kinds of information to include.**

**One of my roles in the Arizona Pest Management Center is to monitor these EPA review activities and to develop reports on how a specific pesticide is used in Arizona and neighboring states. You are welcome to contact me about the pyrethroids or any other pesticides under review. And I hope if I should contact any of you, you could provide me with some good input to strength our reports.**

## **Effective Comments**

- **Not a “form letter”**
- **Real information on how a pesticide is used**
  - **Crops**
  - **Rates**
  - **Number and timing of applications**
  - **Risk mitigation practices (buffers, etc.)**
- **Focus on “niche” or why it is important**
  - **Alternatives, or lack of alternatives**
  - **MRL restrictions, invasive species control**
  - **Resistance management**
- **Emphasize economic impact if the option were lost**

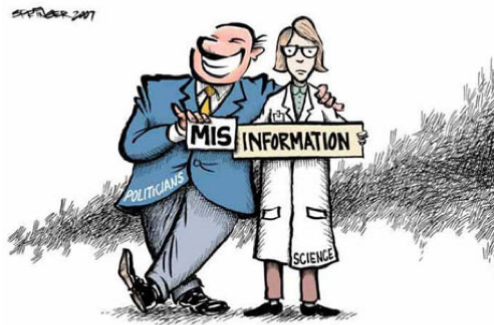
**Form letters are not effective. Some of the advocacy groups use this approach, writing a single letter and then having a bunch of people submit it as separate comments. EPA is seeking real information and data to inform their decision making process, which we hope is based on science.**

**This information could be useful for revising EPA assumptions about how much a chemical is use.**

**This information describes any of the nuances that impact your choice of a particular chemistry.**

**And economic impact is very important and reasonably derived estimates of economic impacts carry weight.**

## The Power of Data



**I started with this pyrethroid issue first to get your attention and to make sure everyone is well aware of it. It brings into focus just one of the ways we are using the Pesticide Use Data to try to help Arizona agriculture.**



# Value of Pesticide Data

- Provide real data to support registration reviews & policy decisions that affect AZ crops
- Educate growers, PCAs, Extension colleagues and others about AZ pest management
- Evaluate impact of new technologies and IPM
- Document long-term pesticide use trends that reveal a progressive industry and active environmental stewardship
- Increase funding for IPM research & education



**Access to accurate agricultural pesticide use data allows us to defend useful and important chemistries on behalf of Arizona agriculture. The data also inform education and outreach, and allow us to analyze long term trends and secure competitive grant funds to address pest management problems.**



# Arizona Data Resources

- **APMC Pesticide Use Database**
  - 26 years of AZ use records
  - From state use reports (ADA)
  - Verified, corrected data
  - Searchable database (all crops)
  - Integrated with other useful information

- **Crop Pest Losses Surveys**
  - Impact assessment: pests, pesticides and economics
  - Real world data developed by PCAs
  - AZ statewide (+ S.E. CA): Lettuce, Cotton
  - Several new crops in PNW
  - Unique insights into the intent of sprays made



**We use two major sources of Arizona pesticide use data. The first resource is the Arizona Pest Management Center (APMC) pesticide use database, which contains all applications reported to Arizona Department of Agriculture. The second resource is the Crop Pest Losses surveys we conduct in lettuce, cotton with funding through the Western IPM Center Signature Program. If you work in either of those crops, I encourage you to attend those workshops.**



# Examples

**How Pesticide Use Data  
benefits AZ agriculture**

# Registration Reviews Open Comment Periods

regulations.gov  
Your Voice in Federal Decision-Making

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## Reregistration Review of Glufosinate Ammonium (PC Code 128850)




Docket Folder Summary View all documents and comments in this Docket

Docket ID: EPA-HQ-OPP-2008-0190 Agency: Environmental Protection Agency (EPA)

Summary:  
For further information contact: Shirley Keel (703) 603-0106 Mail Code (7508P)

View More Docket Details

### Primary Documents View All (3)

	Registration Reviews: Sulfonyleureas and Certain Other Pesticides; Proposed Decisions	<a href="#">Comment Now!</a>
Notice	Posted: 07/14/2016 ID: EPA-HQ-OPP-2008-0190-0046	Due Sep 12, 2016 11:59 PM ET
	Registration Reviews; Draft Human Health and Ecological Risk Assessments: Cyromazine, Silica...	Comment Period Closed
Notice	Posted: 03/07/2013 ID: EPA-HQ-OPP-2008-0190-0021	May 06, 2013 11:59 PM ET
	New Dockets Opened for Review and Comment(Glufosinate Ammonium Case #7224)	Comment Period Closed
Notice	Posted: 03/26/2008 ID: EPA-HQ-OPP-2008-0190-0001	Jun 24, 2008 11:59 PM ET

### Supporting Documents View All (34)

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14  
Comments Received\*


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\*This count refers to the total comment/submissions received on this docket, as of 11:59 PM yesterday. Note: Agencies review all submissions, however some agencies may choose to redact, or withhold, certain submissions (or portions thereof) such as those containing private or proprietary information, inappropriate language, or duplicate/hear duplicate examples of a mass-mail campaign. This can result in discrepancies between this count and those displayed when conducting searches on the Public Submission document type. For specific information about an agency's public submission policy, refer to its website or the Federal Register document.

**I have already mentioned responding to EPA Open Comment periods. These have become more and more frequent in the past few years.**

<small>Agricultural Experiment Station Cooperative Extension</small>		<small>37860 West Smith-Enke Road Maricopa, Arizona 85138 (520) 568-2273 FAX: (520) 568-2556</small>
<p><b>Chlorpyrifos Use in Arizona and New Mexico</b> <b>Prepared by Alfred Fournier, Ayman Mostafa,</b> <b>Joshua Sherman, Wayne Dixon &amp; Peter C. Ellsworth</b> <b>Comments submitted by the Arizona Pest Management Center,</b> <b>University of Arizona</b></p>		
<p>EPA Docket: EPA-HQ-OPP-2015-0653 Date Submitted: January 17, 2017</p>		
<p>These comments are submitted in response to EPA's proposed revocation of all food residue tolerances for the insecticide active ingredient chlorpyrifos. Should this revocation proceed as outlined by EPA, all agricultural uses of chlorpyrifos would cease. This report presents use information and comments from agricultural stakeholders and university scientists that document important agricultural uses of this insecticide in Arizona and New Mexico and potential impacts of the loss of chlorpyrifos on Southwestern growers. <b>These comments are meant to supplement earlier and more comprehensive comments submitted by the Arizona Pest Management Center (APMC) in response to EPA-HQ-OPP-2015-0653-0001 open comment period which closed January 5, 2016</b> (EPA comment ID# EPA-HQ-OPP-2015-0653-0380, also at <a href="http://cals.arizona.edu/apmc/docs/15EPA-Chlorpyrifos-Use-in-ArizonavF.pdf">http://cals.arizona.edu/apmc/docs/15EPA-Chlorpyrifos-Use-in-ArizonavF.pdf</a>). We also wish to reference a comment submitted to this EPA docket in January 2016 by University of Arizona Professor of Entomology and Extension Specialist, Dr. John Palumbo (comment ID: EPA-HQ-OPP-2015-0653-0260).</p>		
<p><b>Summary</b> While chlorpyrifos use has declined significantly along with other broad-spectrum insecticides over the past two decades, strategic uses remain important as part of integrated pest management (IPM) programs in a variety of crops in the desert southwest. Chlorpyrifos, while not used often on most Arizona crops, remains an important "go-to" product in certain situations. Its broad-spectrum efficacy facilitates control of multiple targets, including less</p>		


**For example, we submitted comments on Chlorpyrifos last month. While chlorpyrifos use has declined significantly along with other broad-spectrum insecticides over the past two decades, strategic uses remain important as part of integrated pest management (IPM) programs in a variety of crops including alfalfa, sorghum, corn and pecans.**



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**ARID SOUTHWEST IPM NETWORK**

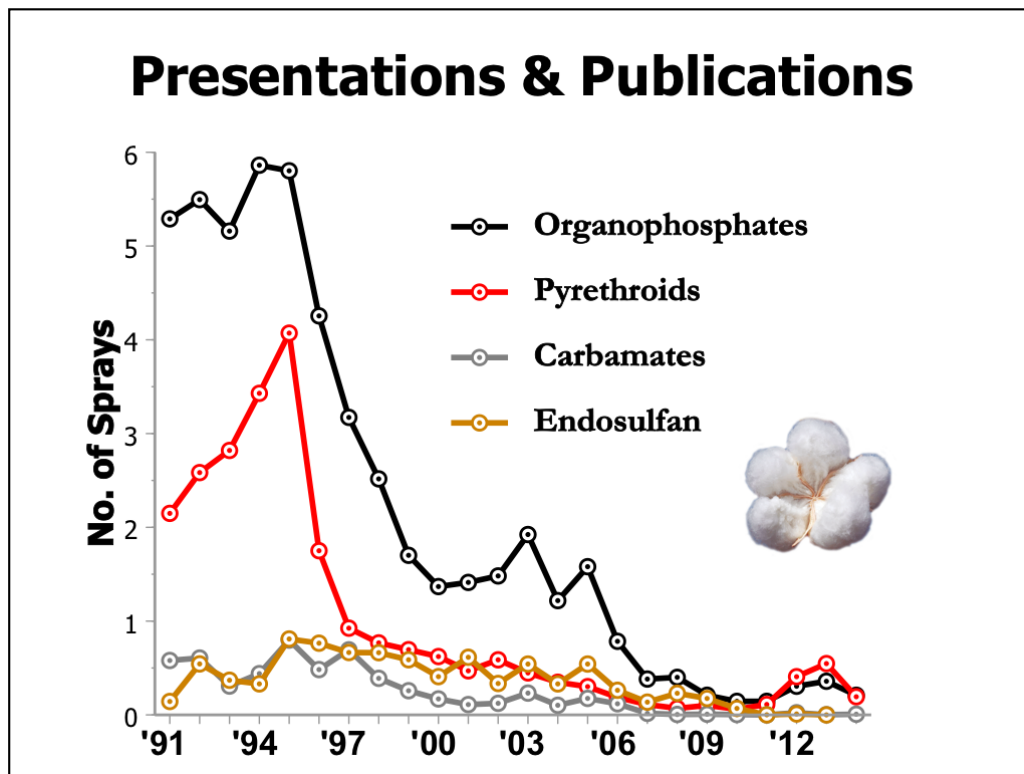
COOPERATIVE EXTENSION



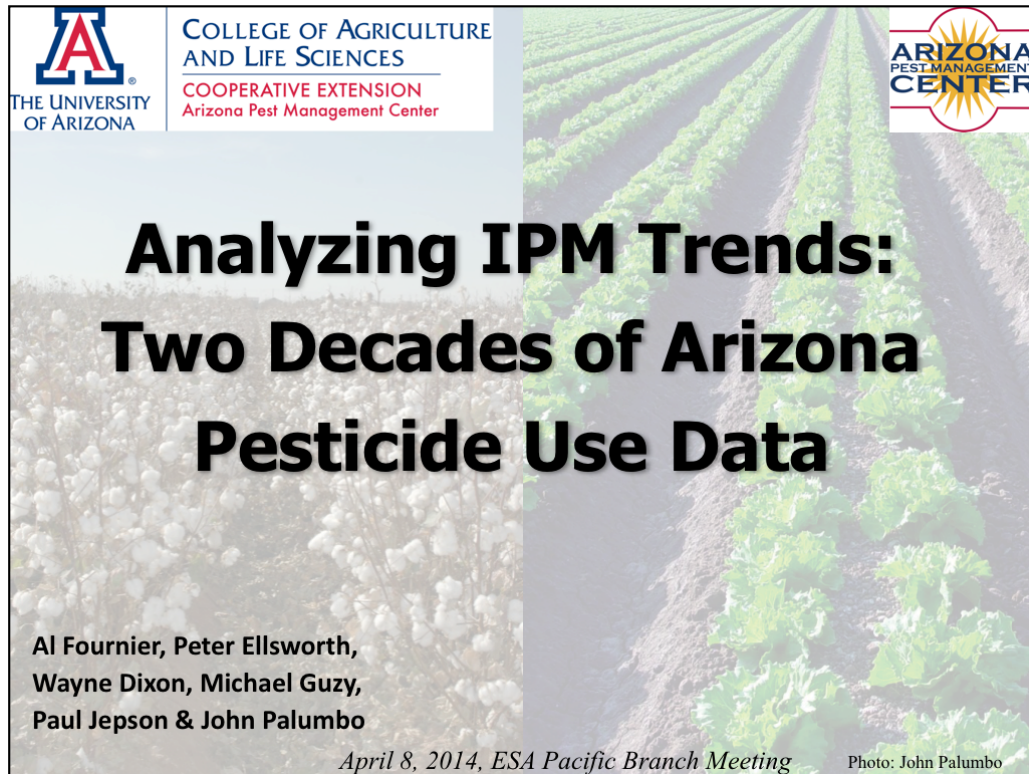
[cals.arizona.edu/apmc/Arid\\_SWPMC\\_Info\\_Requests.html](https://cals.arizona.edu/apmc/Arid_SWPMC_Info_Requests.html)

- Since 2006, the APMC has responded to over 60 federal requests (mostly EPA) related to **Pesticide Registration Issues**
- Reports include data from 1080 reports, crop pest loss surveys and end-user comments

**The combination of real Use Data and stakeholder comments carry weight with EPA. We know of several cases where uses were retained in Arizona as a result of our comments.**



**Charts like this one, based on Pesticide Use Data, have frequently been used in Extension presentations, publications, impact reports, and have been presented at academic conferences. Our national and international colleagues often marvel that we have access to this kind of data. As well, they are amazed at the progress made in Arizona agricultural pest management as depicted by these trends.**



**In collaboration with colleagues at Oregon State University, we analyzed over 20 years of Pesticide Use Data in Arizona lettuce and documented stunning reductions in environmental risks as a result of reduced-risk technologies and the outstanding stewardship practices of our produce industry.**

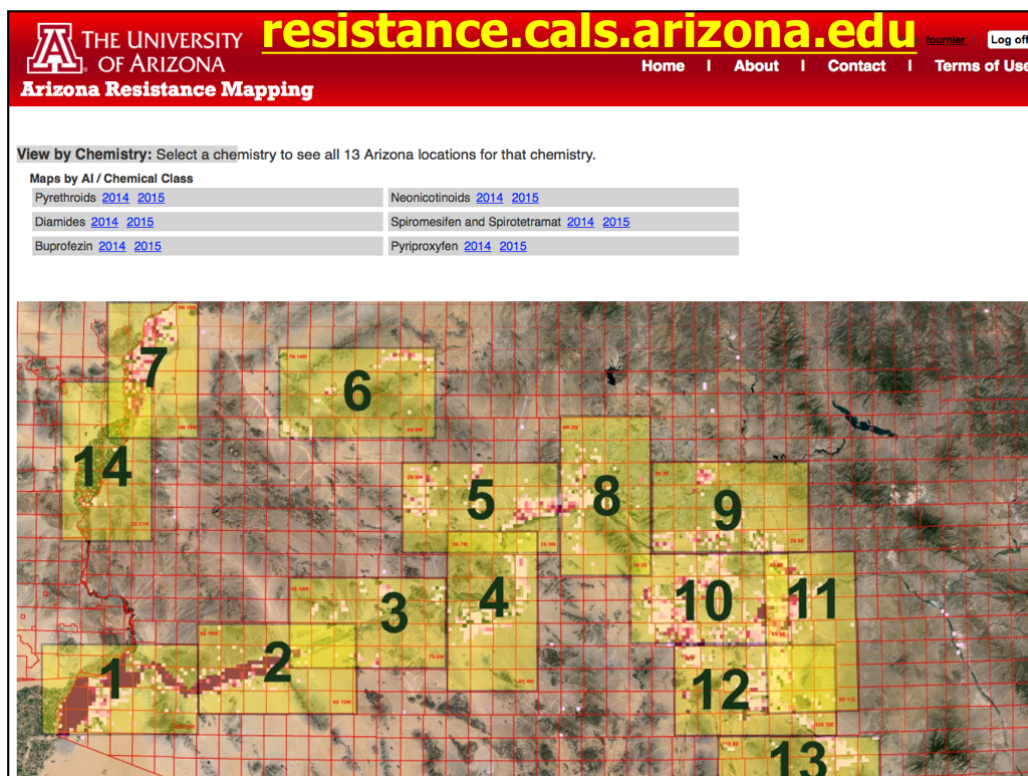





## Chemical Use Maps for WF Resistance



1. **Develop materials for teaching** landscape principles of resistance management (MAPS & more)
2. **Test hypotheses** for understanding / predicting regional patterns of resistance as they relate to whitefly chemical use patterns
3. **Measure changes** in awareness, knowledge, skills & chemical use practices for resistance management



**We developed a set of 6 maps (one for each mode of action) for each of 13 geographic regions. The maps show all reported uses of these chemistries for 2014.**



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Arizona Resistance Mapping

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This website provides secure access to Chemical Use Maps for 2015 & 2014 whitefly insecticide use, based on pesticide use reports (1080s) provided to the Arizona Department of Agriculture and California Agricultural Commissioner's office by end users. We hope this information will help support effective whitefly control decisions and improve resistance management. See [Explanation of Data Used to Create Maps](#) . Please read our [Terms of Use](#) .

**View by Area:** Select your location to see all 6 chemical use maps for your scene of interest. (See map below for reference.)

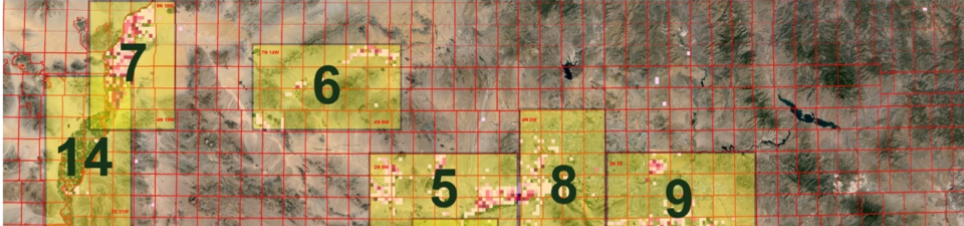
Maps by Area

(1) - Yuma <a href="#">2014</a> <a href="#">2015</a>	(2) - Yuma, East County <a href="#">2014</a> <a href="#">2015</a>	(3) - Aztec/Hyder <a href="#">2014</a> <a href="#">2015</a>
(4) - Paloma / Cotton Center <a href="#">2014</a> <a href="#">2015</a>	(5) - Buckeye / Tonopah / Harquahala <a href="#">2014</a> <a href="#">2015</a>	(6) - Aguila / Wenden / Salome <a href="#">2014</a> <a href="#">2015</a>
(7) - Parker Valley <a href="#">2014</a> <a href="#">2015</a>	(8) - Goodyear / Laveen <a href="#">2014</a> <a href="#">2015</a>	(9) - Scottsdale / East Valley <a href="#">2014</a> <a href="#">2015</a>
(10) - Maricopa / Stanfield / Casa Grande <a href="#">2014</a> <a href="#">2015</a>	(11) - Coolidge / Florence <a href="#">2014</a> <a href="#">2015</a>	(12) - Arizona City / Eloy <a href="#">2014</a> <a href="#">2015</a>
(13) - Marana <a href="#">2014</a> <a href="#">2015</a>	(14) - Blythe / Palo Verde <a href="#">2015</a>	

**View by Chemistry:** Select a chemistry to see all 13 Arizona locations for that chemistry.

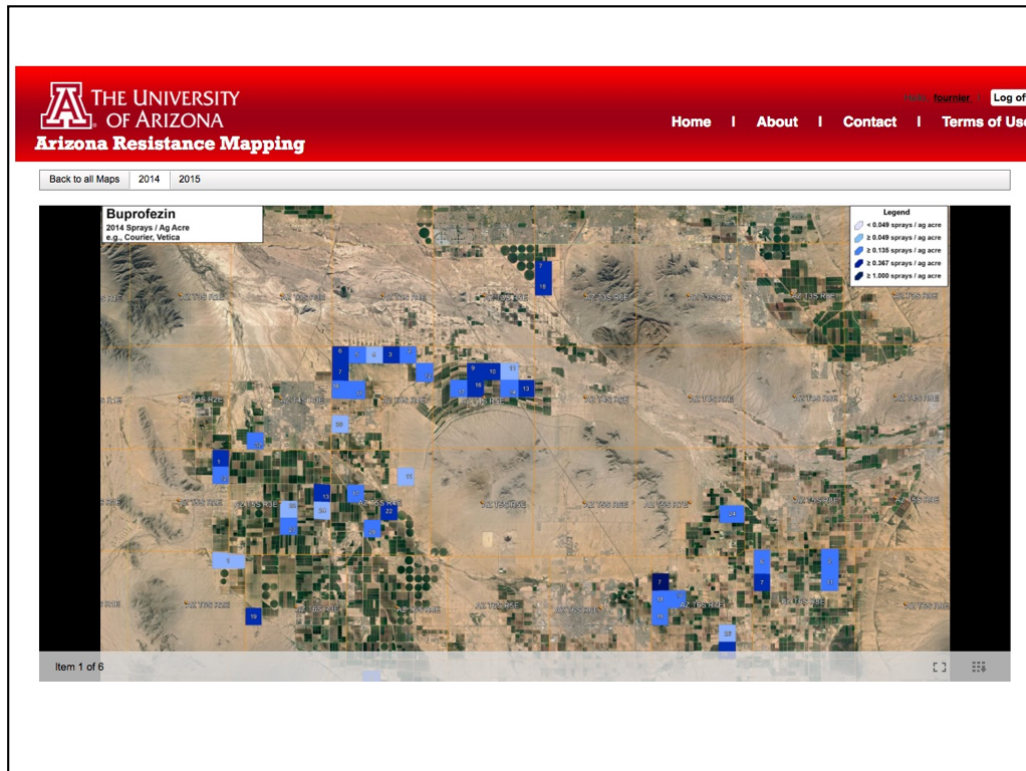
Maps by AI / Chemical Class

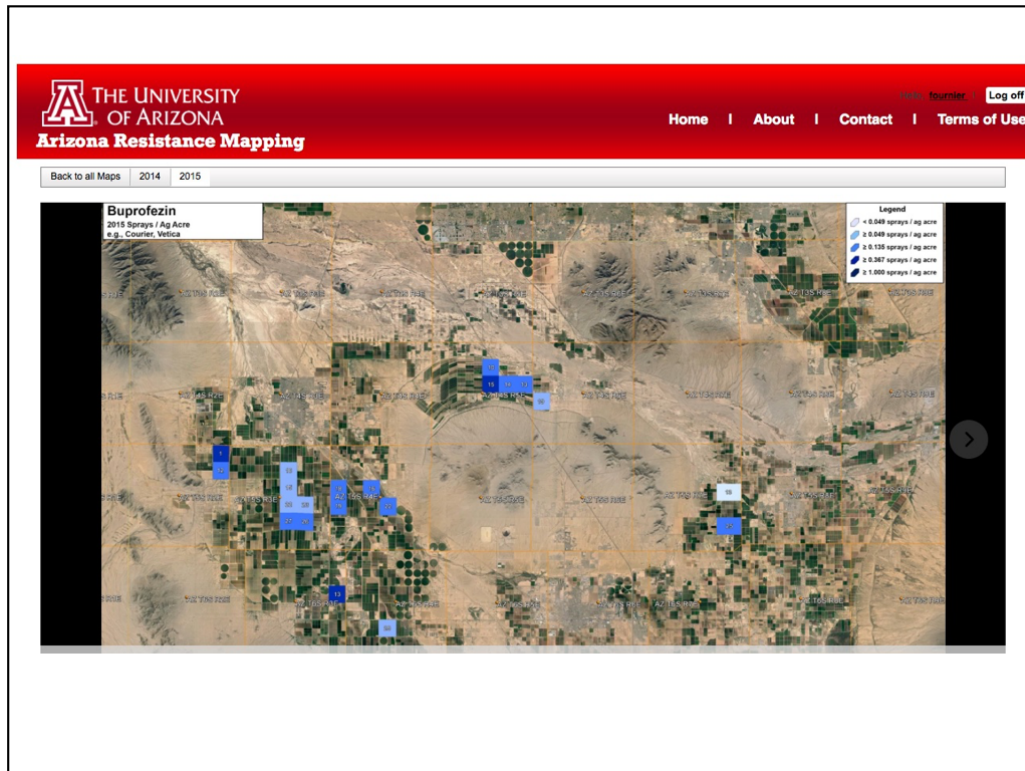
Pyrethroids <a href="#">2014</a> <a href="#">2015</a>	Neonicotinoids <a href="#">2014</a> <a href="#">2015</a>	Diamides <a href="#">2014</a> <a href="#">2015</a>
Spiromesifen and Spirotetramat <a href="#">2014</a> <a href="#">2015</a>	Buprofezin <a href="#">2014</a> <a href="#">2015</a>	Pyriproxyfen <a href="#">2014</a> <a href="#">2015</a>



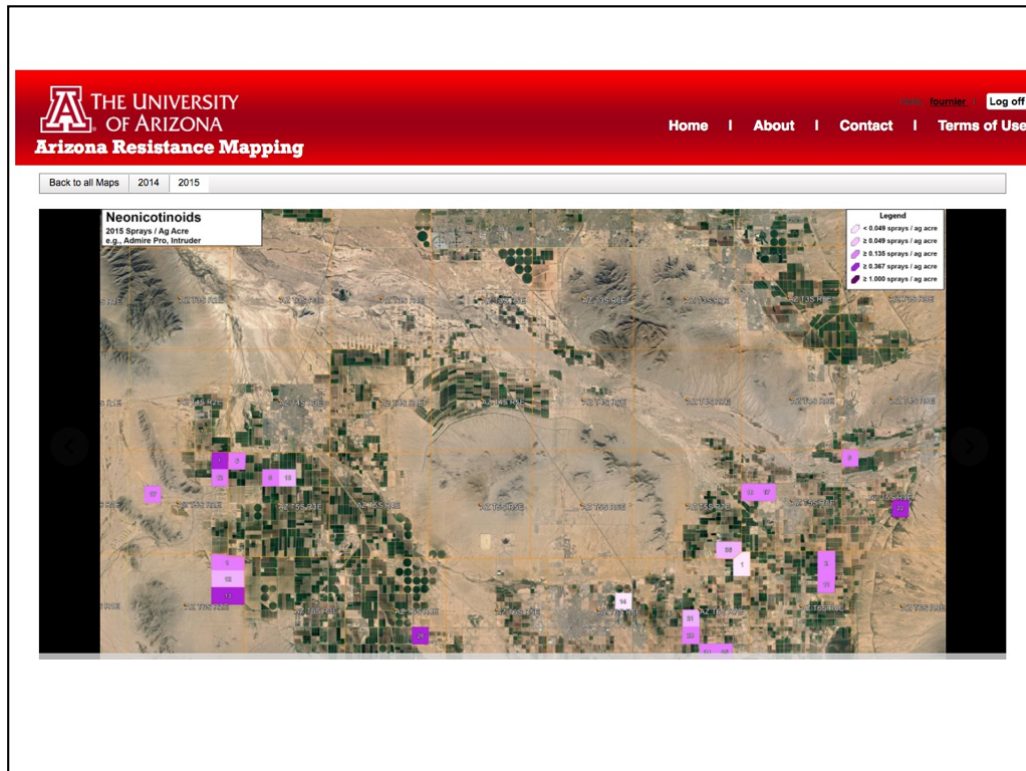
University of Arizona, Fournier et al.

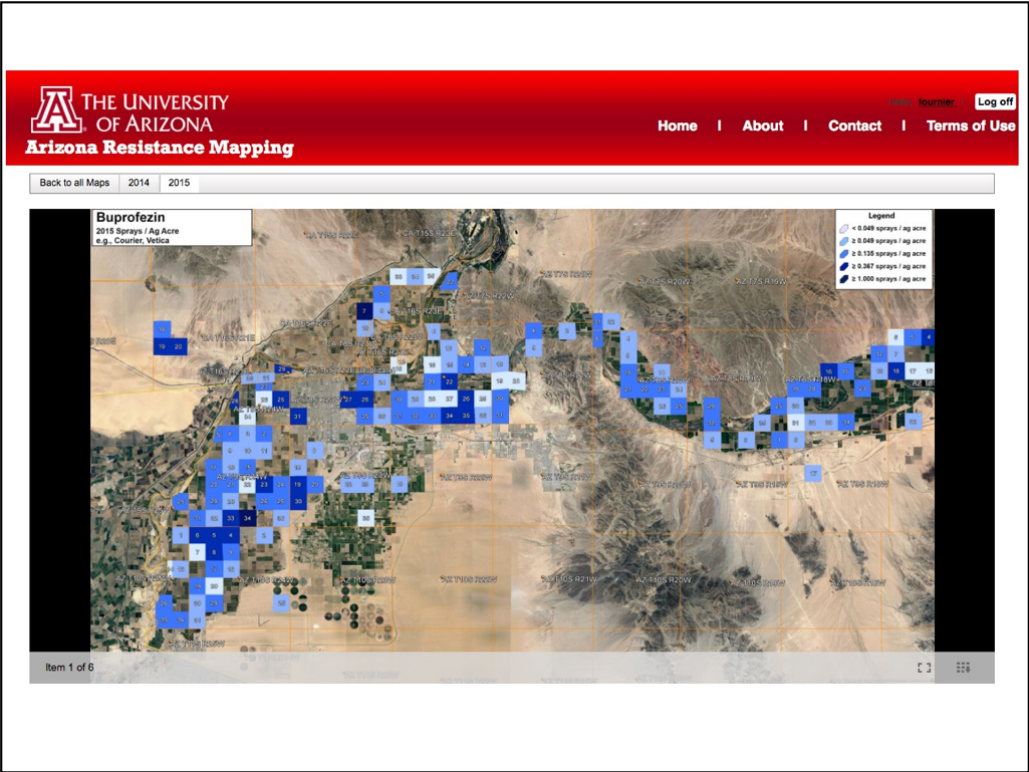
19



















**We respect and  
protect your data**





## APMC Pesticide Use Database

- Secure server at MAC with on-site access only
- **Pesticide Use Database Advisory Committee**
  - Review external data requests
  - Provide ongoing feedback on research projects
  - Meet annually (Yuma and Maricopa)
- Data presented only in aggregate, without identifiers
- Data integrity & verification are built into our process



**Better pesticide use data  
means better information  
and resources for your  
industry**



## **Lots of data!**

- **26 years of data (1991 - 2016)**
- **612,000+ 1080s (~24,000/yr)**
- **1,005,000+ sprayed locations**
- **2,100+ products**
- **120+ different crops**

***Errors do occur!***



**The stats on this slide give you an idea of the size of the pesticide use database. Errors do occur and we invest a lot of personnel time into identifying and correcting these errors.**



## Data Verification

- Screening data during import from ADA
- Queries to identify potential errors
  - High and low rates
  - High acres treated
  - Location errors
  - Missing products (new ones)
- Review of potential errors and resolution
- PDF forms of 1080s from ADA help
  - No PDFs for Agrian data submitted electronically

**A database is only as good as the data it contains. Garbage in means garbage out. For this reason, we proactively review the data, seek out potential errors and correct them. We have access to PDF scans for a high percentage of the submitted 1080 forms, which greatly improves our ability to correct data.**



## Data Issues (1)

- **Data entry errors (ADA)**
  - Error rate is small, but can add up
  - Many fields can be affected
- **Rates**
  - Decimal errors
  - Math errors
  - Acres incorrect
  - Typos
- **Product errors**
  - Product identification (based on EPA#)
- **Crop identification errors**

**These are some of the types of data errors that can be seen in a small proportion of the data. With over 100 different data fields on over 1 million 1080 forms in our database, even a low error rate can result in a large number of records that need to be manually reviewed and corrected. This requires a large investment of personnel time.**



## Data Issues (2)

*You can help!*

- **Duplicated records!**
  - Faxed twice
  - faxed and mailed
  - Agrian electronic submission, also mailed or faxed
  - Sprays over multiple days, resubmitted

**One disturbing error we see is when a single 1080 form is submitted more than once to ADA. Sometimes the form may be entered multiple times, leading to an overestimate of chemical use. We have worked with ADA to help reduce the potential for entering the same data twice. However, you can help by making sure any applications get submitted to ADA via only a single route. For example, if data are sent electronically through Agrian, do not submit a hard copy to the state.**



## Data Issues (3)

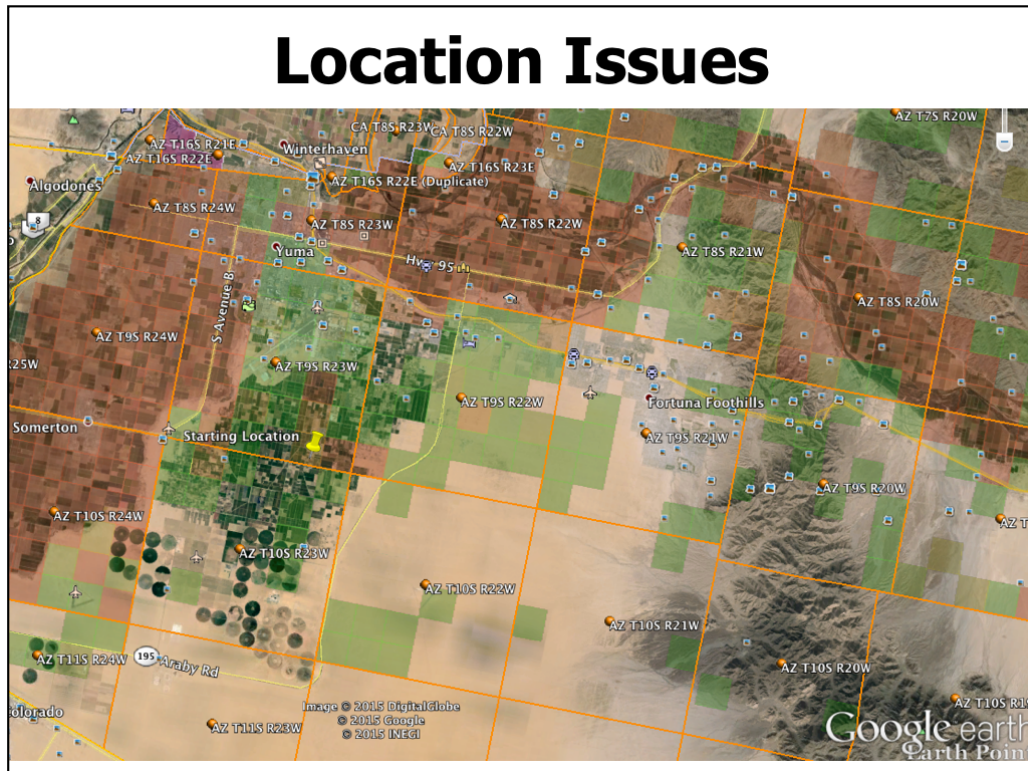
*You can help!*

- **Location errors**
  - Data entry at ADA (not common)
  - Wrong TRS on 1080, often repeated
  - Additional field notes and site information important to resolving these issues

*We can help!*

- *We have web resources including TRS maps and links to useful apps.*
- *I am glad to visit with office staff, PCAs or others. 520-705-9903.*

**In developing the Chemical Use Maps in 2015, we realized we have a significant number of location errors in the database, where Township, Range, and / or Section are incorrect. We created a template that indicates where all agricultural land sits (by section) throughout the state. We use this to check for reported uses in non-agricultural areas. We found that sometimes when a TRS is entered incorrectly for a field, the same error gets repeated with each subsequent 1080 that is turned in. There are online tools that include a Township-Range-Section grid to help growers and PCAs identify and correct these errors. (See below.)**



**This map shows what our data looked like at the beginning of the mapping project, before data corrections. Pesticide applications (brown and green squares) are sometimes shown outside of valid agricultural areas. Each of these records had to be examined and in many cases we made calls to PCAs or growers to make them aware of these errors and to help us find the valid location.**



## You may hear from me...






**You may hear from me if you are a PCA or grower and we find a record with invalid location information. I can use your help to make sure we get the information right in our database.**

## Resources

- **Earth Point – Integrates with Google Earth, provides TRS grid**
    - [www.earthpoint.us](http://www.earthpoint.us)
    - \$50/yr per user with discounts for multiuser accts
    - \$10 pre-pay option
  - **Public Land Survey System (PLSS)**
    - [www.metzgerwillard.us/plss/plss.html](http://www.metzgerwillard.us/plss/plss.html)
- **UA portal for AZ & CA specific map resources**
    - [cals.arizona.edu/apmc/1080support2.html](http://cals.arizona.edu/apmc/1080support2.html)

**These two websites are available, and can help you if you are not sure about the legal description for a field location. You can download a simple App that works with Google Earth on your computer or tablet. It places the Township-Range-Section grid over the map to help you identify where you are. Both of these links can be found on a UA webpage with other resources, including maps, to help improve 1080 data.**



## Conclusion

- **Pesticide Use Data provides great benefits to the agriculture industry**
- **We respect and protect your data**
- **Better pesticide use data means better information and resources for your industry**

**I am going to go traditional and start with an outline of my talk. I really have 3 main points.**

**First, that the PUD that growers, PCAs and applicators submit to ADA provides great benefits back to the AZ agriculture industry. I will provide some examples of how the data are used.**

**My second point is that we respect and protect these data. The information is submitted to ADA for regulatory purposes, and we view these data as belonging to the agricultural community. And I will explain how we protect the data.**

**Finally, my thesis is that the more we can improve the PUD, the more complete and correct those data are,**

**the better products, tools and resources we  
can provide back to you.**



**Thank you!**

**Photo credit: J. Silvertooth**