

**Crop Pest Losses and Impact Assessment Work Group (2007 – 2008)**  
Progress Report to the Western IPM Center  
September 5, 2008

**A. Grant Data**

Grant #07-001492-UA3

Title: Crop Pest Losses and Impact Assessment Work Group (2007 – 2008)

Progress Report to the Western IPM Center, September 5, 2008

Type: IWG

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States Involved: Arizona, California, Texas

Funding Year: 2007-2008

Funding Amount: \$10,000

**B. Nontechnical Summary**

Through this project, focused in the low deserts of Arizona and Imperial Valley California, we develop accurate “real world” data on crop pest losses, control costs, target pests and pesticide use, through face-to-face workshops in an interactive survey process that encourages (and rewards) stakeholder input. Growers, pest control advisors (PCAs), Extension personnel and industry professionals attend workshops to complete the survey, and are offered incentives to offset the costs of participation. This face-to-face approach results in improved response rates, a more representative and better quality set of data, education of all those involved, and collaborative partnership with key stakeholder groups. As necessary, we conduct follow-up mail surveys with key PCAs to ensure good representation of region-wide acres in the final datasets. We currently collect data on cotton, melons, lettuce and, to a lesser extent, alfalfa. The data generated are useful for responding to pesticide information requests generated by EPA & USDA, and can provide a basis for regulatory processes such as Section 18 or 24c requests, as well as for evaluating the impact of our extension programs on risk reduction to growers.

**C. Objectives**

- 1. In collaboration with scientists and stakeholders throughout the low desert areas of AZ and southern CA, we will serve as the forum for discussion and**

**development of crop pest loss and impact assessment in key economic crops of this region, including cotton, lettuce, melons and alfalfa.**

*This objective was achieved. We held 7 meetings in the last annual cycle, discussing and developing crop pest losses data for cotton, head lettuce, watermelons, cantaloupes and alfalfa, interacting with about 80 stakeholders (PCAs, growers, industry representatives and Extension personnel) from Arizona and California.*

**2. We will expand our data collection efforts to include weeds, plant pathogens and nematodes as appropriate and relevant to each specific crop.**

*This objective was achieved. In the recent project renewal, we have added weed science and plant pathology expertise to our ranks, and have begun to expand data collection for the first time beyond crop insect losses. Starting with the 2008 Melon Pest Losses, we have incorporated questions on melon diseases and related data on fungicide use. In 2008, we also piloted a new Alfalfa Insect Losses survey with PCAs at three Cotton / Alfalfa losses meetings.*

**3. We will serve as a clearinghouse for developed information and metrics on crop pest losses and impact assessments.**

- a. We will address all Federal, state and local requests for information on the impacts of pests or pesticides and other pest management practices in our key crops.**
- b. We will assist others in the extension of this process as a model for development of additional stakeholder-derived data as requested.**
- c. We will summarize data on crop pest losses on a dedicated webpage, making these data available worldwide.**

*3a. This objective was achieved. Through the Arid Southwest IPM Network, we have continued to coordinate responses to federal pesticide information requests for Arizona and neighboring states in the arid southwest. As appropriate and when available, we have incorporated into these responses data collected through the Crop Pest Losses working group, available by clicking “Information Requests” on our website at [http://ag.arizona.edu/apmc/Arid\\_SW\\_IPM.html](http://ag.arizona.edu/apmc/Arid_SW_IPM.html). These data have also served more local needs, such as an analysis of the economic impact of Lygus in Arizona cotton [<http://cals.arizona.edu/pubs/crops/az1437/az14374a.pdf>].*

*3b. This objective was achieved. As reported previously, in June 2007, we coordinated with colleagues in the Texas Cooperative Extension system to organize a Cotton Insect Losses workshop in Lubbock, Texas, attended by 15 local stakeholders. There is interest in initiating cotton losses data collection in West Texas as part of a USDA RAMP grant on areawide management of Lygus, a polyphagous insect pest of many western crops. These data will help monitor*

*changes in pest management practices and their impact over the four year project term.*

- 3c. *This objective was achieved. In 2007, we updated the Cotton Insect Losses website which now features detailed Cotton Insect Losses data and analysis from 1979 through 2006 (<http://ag.arizona.edu/crops/cotton/insects/cil/cil.html>) (2007 data are being finalized and will be added in September 2008.) In 2008, we created a new home on the Arizona Crop Information Site for data and information related to Vegetable / Melon pest losses. This site provides easy access to stakeholders to the pest losses survey form, presentations, data and publications. <http://ag.arizona.edu/crops/vegetables/insects/vegiloss.html>.*

#### **D. Working Group Membership**

In addition to Team Members listed above, many Arizona and California PCAs, growers, and other industry participants have become regulars at our annual meetings, look forward to sharing information among colleagues, and complete crop losses surveys on a regular basis.

#### **E. Progress**

##### *Project Highlights 2007-2008*

- We held 6 face-to-face interactive stakeholder workshops in Arizona and California centered around the topic of pest losses in major crops: cotton, alfalfa head lettuce and melons (table 1).
- We collected, analyzed and in some cases published data on pest losses in these same crops.
- Work group members implemented a pilot Alfalfa Insect Losses survey in a series of 3 joint cotton-alfalfa workshops. Stakeholder interest in extending this process to alfalfa was met with less interest and enthusiasm that we had hoped. Still, we collected about a dozen completed surveys and comments that will help us to refine the survey instrument if sufficient stakeholder interest warrants continuing this process for alfalfa in the future.
- We reached out to weed management and plant pathology colleagues with a proposal to expand future data collection efforts beyond insect losses to incorporate weeds, plant pathogens, nematodes, and their control tools. Starting with melon losses in 2008, we have incorporated survey items related to plant pathogens and fungicide use that will serve as baseline data for ongoing data collection in these crops (watermelons and cantaloupes). Working with Mike Matheron, we plan to similarly expand data collection for the 2009 lettuce pest losses workshops. Also, there is some interest in including weed management data on the next round of cotton pest losses workshops in fall / winter 2008.
- Data collected through this process were also incorporated into responses to Federal pesticide information requests.
- We updated the Cotton Insect Losses website which now features detailed Cotton Insect Losses data and analysis from 1979 through 2006

(<http://ag.arizona.edu/crops/cotton/insects/cil/cil.html>). 2007 data is in the process of being posted as of late August, 2008. (There is a delay in posting data until final average cotton prices are available, which happens each summer for the previous year.)

- We created a new home on ACIS for information related to all Vegetable / Melon pest losses information. This site provides easy access to stakeholders to the pest losses survey form, presentations, data and publications.  
<http://ag.arizona.edu/crops/vegetables/insects/vegiloss.html>.
- We published 4 University of Arizona Crop Report articles based on crop pest losses data (see Appendices, below).

### *Meeting Participation*

A summary of meeting participation is presented in table 1. About 80 stakeholders, including pest control advisors, growers, Extension personnel and agro-industry representatives, participated in 6 meetings in 2 states. Many participants completed crop losses questionnaires and engaged in dialog to help us improve the process.

**Table 1: Crop Insect Losses meeting participation summary**

<b>Date</b>	<b>Crops</b>	<b>Location</b>	<b>Participants</b>
9/12/07	Cotton	Yuma, AZ	10
11/8/07	Cotton & Alfalfa	Parker, AZ	5
11/27/07	Cotton & Alfalfa	Holtville, CA	8
11/29/07	Cotton & Alfalfa	Maricopa, AZ	14
4/15/08	Lettuce	Yuma, AZ	30
7/9/08	Melons	Yuma, AZ	11
7/16/08	Melons	Phoenix, AZ	7
<b>Total</b>	<b>4 crops</b>	<b>2 states</b>	<b>81</b>

**Table 2: Cotton Insect Losses Responses, Arizona, 2007**

<b>Survey use statistics</b>	<b>Cotton</b>
No. of PCA respondents	22 (AZ & CA)
Arizona Acreage reported	82,079
% of total AZ acreage	46.5%

**Table 3: Head Lettuce Insect Losses Responses, Yuma Valley, 2007-2008**

<b>Survey use statistics</b>	<b>Fall Lettuce</b>	<b>Spring Lettuce</b>
No. of PCA respondents	11	11
Acreage reported	17,750	11,300
% of total acreage	76%	51%

**Table 4: Spring Melon Insect Losses Responses, Yuma Valley, 2008**

<b>Survey use statistics</b>	<b>Cantaloupes</b>	<b>Watermelons</b>
No. of PCA respondents	6	5
Acreage reported	2,733	1,280

% of total acreage	85%	80%
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**Table 5: Spring Melon Insect Losses Responses, Central AZ, 2008**

Survey use statistics	Cantaloupes	Watermelons
No. of PCA respondents	2	2
Acreage reported	4200	400
% of total acreage	55%	27%

*Alfalfa Insect Losses Update*

- In 2006-2007, we developed a draft survey instrument for alfalfa insect losses with former project collaborator Mike Rethwisch (University of California, Riverside) and presented it to PCAs for input at one of our cotton insect losses meetings.
- Based on input from PCAs and Extension personnel, we further modified the questionnaire adding sections on weed and plant disease losses. The instrument was piloted at 3 Cotton / Alfalfa Pest Losses workshops in late 2007, 2 in Arizona and one in California.
- Interest and participation in the Alfalfa Pest Losses survey was lower than anticipated. In all, 7 completed surveys were submitted. Prior to repeating the survey in the future, we plan to contact the Alfalfa Growers Association to determine if there is enough interest in the data to sustain continuation of the survey.

**F. Results**

This working group continues to expand its efforts and the value of the data generated through this stakeholder-driven process. In the past year, we have expanded data collection for melons to include plant pathogen and fungicide use data for the first time and also piloted the alfalfa pest losses survey, which included all pest types. Pest Control Advisors have responded favorably to this approach. Since the same individuals are responsible for all aspects of pest control, it makes sense to collect information on all pests at these meetings. Our plans are to continue broadening our efforts in 2008 and 2009, hopefully incorporating weed information into the cotton losses survey and plant diseases into the head lettuce survey.

The data developed through these efforts are publicly available on the Arizona Crop Information Site (ACIS) and through numerous websites and publications listed in the Appendix. Data identify the leading pest threats in these crops and provide information on control costs and pesticide use preferences and patterns.

*Impact of the Data*

These data and this Work Group serve to address any Federal, regional, state, and local requests for information on the impact of insects or insecticides on our key crops. As coordinator of the Arid Southwest IPM Network (another Western IPM Center – funded project), Al Fournier uses these data to respond to federal pesticide information requests

for the crops involved. We had numerous informal requests for information in 2007 and 2008. Responses are posted on the Arid Southwest IPM Network website at [http://ag.arizona.edu/apmc/Arid\\_SWPMC\\_Info\\_Requests.html](http://ag.arizona.edu/apmc/Arid_SWPMC_Info_Requests.html).

What makes these data unique with respect to pesticide (and IPM) policy is that we are directly measuring the “intent” of each insecticide input. That is, stakeholders are asked to identify the specific intent or intended target or targets of their management decisions and inputs. So in addition to the rich quantitative data collected in this exercise, we also have unique qualitative insights into the decision-making experience of the pest manager. These insights will help guide our existing and new programs of research, implementation and IPM outreach.

The data provided through this process are also useful in evaluating aspects of our IPM programs over time (e.g., changes in insecticide use or changes in pest status for these crops) and quickly responding to the changing needs of grower communities. Not only do we hope to sustain these activities to continue to maintain current pest loss data for cotton, lettuce and melons, we hope to continue to expand these efforts over time to include more crops and more types of pests.

Through this data source alone we have been able to document 2006 and 2007 as the two years with the lowest foliar insecticide use in cotton on record in Arizona (records begin in 1979).

## **G. Appendix: Publications, Presentations and Websites**

### *Websites:*

Cotton Insect Losses data (updated through 2007), survey instruments, and links to national cotton insect losses data, is available on the Arizona Crop Information Site (ACIS) at <http://ag.arizona.edu/crops/cotton/insects/cil/cil.html>.

Lettuce and Melon Insect Losses data (updated through 2007), survey instruments, presentations and publications are available on ACIS) at <http://ag.arizona.edu/crops/vegetables/insects/vegiloss.html>.

### *Publications and Presentations:*

Ellsworth, P.C. 2005. Cotton Insect Losses Working Group. Presented at the Maricopa Agricultural Center, Maricopa, Arizona. November 21, 2005.

Ellsworth, P.C., A. Fournier and T.D. Smith. 2007. Based on Ellsworth, P.C. and J.S. Jones. 2000. Arizona Cotton Insect Losses. Publ. No. AZ1183. University of Arizona, College of Agriculture and Life Sciences, Cooperative Extension, Tucson, Arizona. URL: <http://cals.arizona.edu/crops/cotton/insects/cil/cil.html>.

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[http://ag.arizona.edu/crops/presentations/LIL%20wksp%202006%20Final\\_4.pdf](http://ag.arizona.edu/crops/presentations/LIL%20wksp%202006%20Final_4.pdf)

Palumbo, J., A. Fournier, P. Ellsworth, K. Nolte, P. Clay. 2006. Insect Crop Losses and Insecticide Usage for Spring Melons in Southwestern Arizona: 2004 -2006. 2006 Vegetable Report. College of Agriculture & Life Sciences, University of Arizona.  
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Palumbo, J., A. Fournier, P. Ellsworth, K. Nolte, P. Clay. 2006. Insect Crop Losses and Insecticide Usage for Cantaloupes and Watermelons in Central Arizona: 2004 -2006. 2006 Vegetable Report. College of Agriculture & Life Sciences, University of Arizona.  
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Palumbo, J., A. Fournier, P. Ellsworth, K. Nolte, P. Clay. 2006. Insect Crop Losses and Insecticide Usage for Head Lettuce in Arizona: 2004 -2006. 2006 Vegetable Report. College of Agriculture & Life Sciences, University of Arizona.  
[http://cals.arizona.edu/pubs/crops/az1419/3\\_WEB.PDF](http://cals.arizona.edu/pubs/crops/az1419/3_WEB.PDF)

Palumbo, J., A. Fournier & P. Ellsworth, E. Taylor, K. Rice. 2007. Insect Crop Losses and Insecticide Usage for Spring Melons in Central Arizona for 2007. 2007 Vegetable Report. College of Agriculture & Life Sciences, University of Arizona.  
<http://cals.arizona.edu/pubs/crops/az1438/az14382d.pdf>.

Palumbo, J., K. Nolte, A. Fournier & P. Ellsworth. 2007. Insect Crop Losses and Insecticide Usage for Spring Melons in Southwestern Arizona for 2007. 2007 Vegetable Report. College of Agriculture & Life Sciences, University of Arizona.  
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Palumbo, J., K. Nolte, A. Fournier & P. Ellsworth. 2007. Insect Crop Losses and Insecticide Usage for Head Lettuce in Arizona 2006/2007. 2007 Vegetable Report. College of Agriculture & Life Sciences, University of Arizona.  
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