
Meeting called by:	Peter Ellsworth	Type of Meeting:	All hands yearly review and summary meeting.
Note taker:	Al Fournier Naomi Pier		
Attendees:	Nilima Prabhaker Steve Castle Yves Carriere	Wayne Dixon Lydia Brown	

Minutes

1. ARDP Objective 1: Develop spatially explicit materials for teaching landscape principles of resistance management to stakeholders (Extension)

- 1.1. If growers know where the specific chemistries were previously used, they can reduce the risk of resistance (Peter)
 - Parker Valley grower changed his use choices after Peter presented the information at a meeting
 - Not all growers are open – the biggest outreach challenge
- 1.2. Presenting the scale of intensity (Peter)
 - Data available on the number of acres sprayed from the 1080 data and how much of each section is in agriculture, due to (imperfect) data we received from ACRPC
 - From these 2 data points we can estimate the relative risk of resistance
 - Limitations
 - Do not know anything about double or nearly triple cropping practices in some areas (e.g., Yuma)
 - ACRPC spring and fall survey is incomplete
 - Maps are patchy (e.g. Yuma)
 - Work was based on fall survey
 - Not identified fields were assumed to be a WF Host
 - Solutions
 - Use remote sensing to identify specific crops at a cost of around \$20k / year; can sense any crop except for melons
 - Palumbo maps melons each year in spring and fall
 - Whitefly sprays are between certain dates.
 - Some of the chemistries are used for aphids or other pests, and whiteflies may be present
- 1.3. Technical Issue 1: Denominator for acres in whitefly hosts
- 1.4. Education and Outreach
 - IPM Short: First Principles of Resistance Management: <http://ag.arizona.edu/crops/cotton/files/1stPrinciples.pdf>
 - Cotton Inc wanted to use Short to talk to their buyers and people in the fashion sector, as an example of sustainability
 - PCA workshops and other outreach
 - June 10th Yuma workshop was the first of the intensive site intro workshops (3 CEUs) (Peter, Al, Wayne, Palumbo)
 - June 25th Casa Grande workshop (Peter, Al, Wayne, Naomi)
 - July 1st Avondale workshop (Peter, Al, Wayne, Naomi)
 - July 2nd Blythe workshop (Peter, Al, Wayne, Naomi)
 - Advisory group comprised of PCAs, growers and industry representatives giving oversight to the project
 - Meeting September 11, 2015
- 1.5. Mapping and Data Issues
 - Suggested Changes and Additions
 - Include an identifier for the agriculture sections with no applications reported
 - Requests have been made for real time pesticide use reporting
 - An inquiry needs to be made on the possibility of obtaining electronic data directly from Agrian for those growers that utilize the service
- 1.6. Technical Issue 2: Areas that do not report applications
 - Not all areas reported sprays
 - In some cases we are able to obtain records directly from the growers/PCAs

- In cases we cannot secure records, no collections were taken; if there are no pesticide application records there is nothing to test

1.7. To Do

- Develop Chemical Use Maps for Whitefly Chemistry in California (Dixon, Ellsworth, & Fournier, by July 1, 2016)
 - Reach out to CA contacts
 - Integrate CDPR data into APMC database
 - Develop and finalize CA Maps
- Produce at least 2 additional IPM Shorts (Pier, Brown, Ellsworth)
 - Chemical Use Maps as a Tool for Decision Making
 - Translate IPM Shorts into Spanish for distribution & trainings in Mexico (Y2, Ellsworth)
- PCA workshops and other outreach (Ellsworth & Palumbo)
 - Short features in Veg IPM Updates (Y1 & Y2, Palumbo & Ellsworth)
 - Work with industry leaders to develop a session at Southwest Ag Summit in March 2016 (Y2, Ellsworth & Palumbo)
 - Breakout session at DAC in May 2016 (Y2, Ellsworth & Palumbo)
 - Dec 2015 Cotton Pest Losses (Ellsworth)
 - Apr 2016 Lettuce Pest Losses (Palumbo)
- Present (preliminary) results of research findings through various channels (May 2016, Ellsworth, Palumbo, Brown, Pier, Fournier)
- Develop mock-up of Lygus Simulation Training Environment, adapted to demonstrate how such a tool can be used in the teaching of advanced concepts in spatial dynamics of resistances in simulated eco-regions made up of multiple crops subject to multiple pest control chemistries (May 2016, Ellsworth with input from team)

2. ARDP Objective 2: Test hypotheses for understanding / predicting regional patterns of resistance as they relate to whitefly chemical use patterns (Research)

2.1. Population collections

- 41 populations collected total with 36 testable collections

13	Yuma	2 fields treated with Knack 1 field unknown PCA/treatments 1 field treated with Danitol/Orthene, Transform, Knack 1 field F2/F3 clone from other researcher collection
19	Central	4 fields treated with Transform 1 field treated with Courier 3+ weeks before collected
9	Blythe/Parker	
5	Lost	6 fields total were lost from Central AZ, 2 fields were successfully recollected 1 field lost from Yuma
36 Total fields with testable collections made		

- Need to obtain CA pesticide use data for the Blythe collections
- GPS Coordinates and TRS data available for all collections

2.2. Doses

- Based upon Tim & Xianchun's resistance studies
- Imidacloprid initially used 10ppm and 100ppm doses, shifted to only using the 10ppm doses
- Pyriproxifen used 1ppm dose

2.3. Bioassays

- Still need to complete bioassays for several collections
- Bioassays run on original population and F1 generations
 - Analyses can be checked for any significant differences between generations

2.4. Analyses

- Data will need to be corrected based on the control mortalities
- Average mortality for each population will be taken, transformed, and analyzed (Yves)
- Decision will need to be made if data is to be corrected based on control mortality (Steve & Nilima)
- Nilima argues for doing 2 doses next year, Peter says while that is acceptable it is bet-hedging

2.5. To Do

- Use the chemical use maps to strategically focus and deploy resistance monitoring (sampling) in "designated" zones for testing key hypotheses about resistance development. These test zones will be selected carefully to preserve the integrity of the experimental design and secure statistical power sufficient to reveal trends in resistance dynamics spatially (Castle & Pier, May–October 2016).
- Collect whitefly populations during the period of rapid population growth in cotton when they are about to be under the most active management and readily collected in large numbers for bioassays (Castle & Pier, May–October 2016)

- Blythe and Imperial (Bard/Winterhaven) populations to be collected and sampled in 2016 for IKMP (Pier, 2016)
- Test WF populations collected against each of the 6 chemistries (7 products) for resistance (Prabhaker, Castle & Pier, May–October 2016)
- Prepare data from resistance testing for analysis (Castle, Prabhaker & Pier, Sept 2015)
- Perform statistical and spatial analyses on Year 1 data (Carrière & Pier, Oct – Dec 2015)
- Perform statistical and spatial analyses on Year 2 data (Carrière & Pier, Oct – Dec 2016)

3. ARDP Objective 3: Measure changes in awareness, knowledge, skills, behavior and condition with respect to resistance status, chemical use practices and landscape concepts in resistance management (Extension)

3.1. Surveys

- Pre/post-surveys at Extension events, workshops, and meetings
- Online surveys distributed as links in cotton advisory blog, Vegetable IPM Updates, and County Agent communications
- Web-based surveys on chemical use maps site
 - Pre-survey
 - 31 responded
 - Respondents reached have most of the acres
 - Post-survey
 - Follow-up by phone and in person
- Ways to capture changes in behavior
 - Are attendees learning?
 - Intention to adopt – respond high but in actuality mid intent
 - Things to motivate people to figure out

3.2. Chemical use maps site

- Imagined website being looked at several times
 - Most only looked once
- People motivated to go to website would be consider to be biased towards already knowing what is happening in their area
 - 1/4 to 1/3 know what is being used and take it into considerations

4. Other

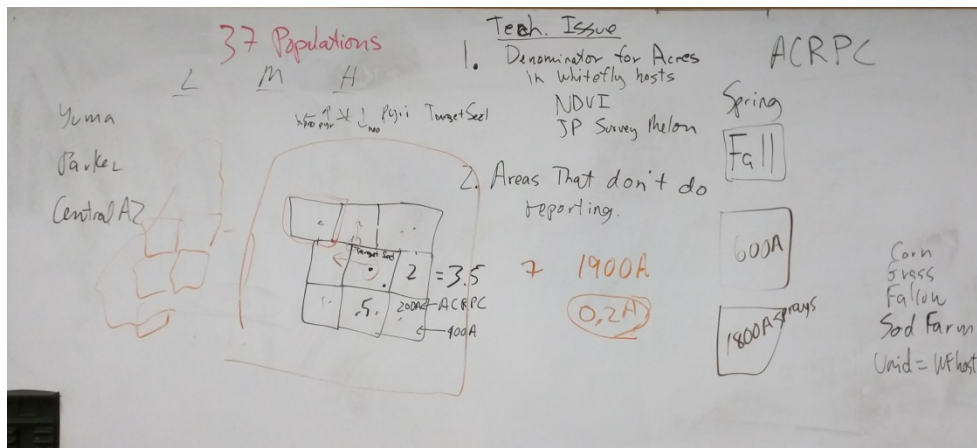
4.1. How much time should be invested in getting addition chemical use data beyond what is available from the 1080s? (to Yves)

- Treat analysis with existing data
- Invest more time in problem area gather data
- Flag sites before analysis where the chemical use data is incomplete

4.2. To Do

- Request all reports on target fields from PCAs to get idea of how complete data is in surrounding areas (Naomi)
- Give Wayne access to field GPS points (Naomi)
- Generate a comparison report of total TAC reported versus ACRPC acres to determine outliers to be verified by hand (Wayne, Yves team)

4.3. Board Image



Note: The 37 populations (in red) are actually 36 populations. The one lost from the final trip to Yuma was not accounted for in the total.