Department of Pesticide Regulation – Pest Management Alliance Program
Alliance Team Meeting
January 24, 2017

Minutes for Alliance Team Meeting

Project Title: "Area-wide Integrated Pest Management Program for Virginia Creeper Leafhoppers (*Erythroneura ziczac*) in North Coast Vineyards"

Grant: #15-PML-G001

Alliance Team Members: Kent Daane, Houston Wilson, Glenn McGourty, Lucia Varela, Serguei Triapitsyn, Doug Downie

Meeting Location: UCCE-Mendocino office (890 N. Bush St., Ukiah, CA, 95482)

Meeting Called: 9:01am on January 24, 2017

In Attendance:
Kent Daane (UCCE / UC Berkeley), Houston Wilson (UC Berkeley), Lucia Varela (UCCE North Coast), Ryan Keiffer (UCCE Mendocino), Glenn McGourty (UCCE Mendocino, by phone), Mark Robertson (DPR, by phone), Broc Zoller (Pear Doctor Inc.), Jeff Gleaves (AgUnlimited), Michael Fidler (AgUnlimited), Lindee Jones (AgUnlimited), Bill Oldham (AgUnlimited), Al White (Mendocino Wine Company and La Ribera), Aldo Cabrera (Beckstoffer), Randy Krag (Beckstoffer), Ara Avadisi Abramians (Fetzer), and Matt Tollini (Fetzer).

(1) HW provides brief history of the Virginia creeper leafhopper (VCLH) Area-wide IPM Project

(1a) Background: Vineyard Leafhoppers
- *Erythroneura* leafhoppers in California vineyards
    - Virginia creeper leafhopper (*E. ziczac*), Western grape leafhopper (*E. elegantula*), Variegated leafhopper (*E. variabilis*)
    - Key parasitoids – *E. ziczac* (*Anagrus daanei* and *A. tretiakovae*), *E. elegantula* (*A. daanei* and *A. erythroneurae*), *E. variabilis* (*A. erythroneurae* and *A. tretiakovae*)
    - Leafhopper/parasitoid overwintering biology and the importance of *Anagrus* spp. overwintering habitat near vineyards to support biocontrol

(1b) Key differences between VCLH and WGLH in the North Coast
- VCLH has earlier oviposition and prefers glabrous varietals
- Currently no biological control of VCLH in the North Coast
    - *A. daanei* is present in North Coast, but does not seem to attack VCLH
    - *A. daanei* population in Sacramento Valley will attack VCLH, could be introduced into North Coast vineyards

(1c) Summary of Activity and Key Findings from Each Year of the Project
- 2011-2012 – first severe outbreaks of VCLH
    - Observed no parasitism of VCLH

- 2013-2014 – parasitoid surveys and experiments, spray trials with OMRI materials, grower outreach/education
    - *A. daanei* population identified in Sacramento Valley, experiments demonstrate it will attack VCLH from the North Coast
    - Education emphasizes VCLH identification and early season sprays to target first brood VCLH nymphs

- 2015-2016 – parasitoid introductions, regional monitoring and newsletter, spray trials with OMRI materials, grower outreach/education
    - Parasitoid releases can increase parasitism rates
    - Regional monitoring and newsletter provide general updates on VCLH life stages

(1d) More Detailed Focus on Activities and Findings from Crop Year 2016

- Regional Monitoring and Newsletter
    - Monitored 12 sites (7 in Mendocino, 5 in Lake)
    - Collected data on leafhopper adult, egg and nymph densities
    - Summarized data in a weekly newsletter with updates on leafhopper populations development

- Parasitoid Release Program
    - Released more than 15,000 *A. daanei* at 9 vineyards (7 in Mendocino, 2 in Lake)
    - Releases led to increased VCLH parasitism at 3 of the 9 vineyards
    - The greatest effect was seen at sites where high densities of parasitoids were released multiple times over the season starting early in the year

- Outreach/Education
    - Tailgate Talk (July) and IPM Seminar (November)
    - Newsletter
    - Project Website

(1e) Tentative Plans for 2017

- Regional Monitoring and Newsletter
    - Same number of sites in Mendocino, but will increase number of sites in Lake County
    - As before, monitoring includes weekly adult, egg, nymph counts at each site

- Parasitoid Release Program
    - Will increase the number of *A. daanei* colonies at UC Berkeley from 4 to 9
    - Rearing of *A. daanei* will be initiated earlier in the year
    - Goal is start releasing parasitoids ~Apr 7
    - More releases scheduled for Lake County

- Outreach/Education
    - Tailgate Talk (summer) and IPM Seminar (fall)
    - HW will also give talks on VCLH in Napa, Sierra Foothills, Central Coast and possibly SJV
    - Pest ID cards
    - Ecological modelling

(2) LV/HW lead discussion and review of plans for 2017

(2a) Regional Monitoring Program

HW: What was useful? Was this too much work? We're thinking about adding more sites in Lake County.

BZ: Random numbers with locations for weekly sticky-traps were useful. Monitoring three sites is about the maximum due to time constraints. It may be interesting to include a new site north east side of Clear Lake.

RK: It took 2 full days for me to collect and process data from my 4 sites.

KD: In terms of site selection, it would be a good idea to release parasitoids in 2017 at sites where you found some parasitism in 2016. The parasitoids may have established in small numbers and additional releases in 2017 could keep this going.

BO: VCLH is in Upper Lake, but not at the vineyard we monitored last year. I have it in one vineyard, but it's conventional and will receive a systemic, so not very good for monitoring VCLH life stages.

BZ: I have a site near Middletown that might be good to monitor.

LV: Sites that represent "negative data" (i.e. where VCLH is not present) are important to monitor spread of this pest. I think we should repeat the presence/absence mapping exercise that we conducted with AgUnlimited in 2015 (PCAs marked where they do and don't see VCLH in Mendocino and Lake County). It would be interesting to compare these maps year over year.

RK: What about starting off by monitoring a wide range of sites and then selecting those that look best in terms of leafhopper populations after 2-4 weeks?

LV: I think we should take a step back and discuss the overall utility of the "Leafhopper Newsletter". As it is now, the monitoring and newsletter require a lot of work and we're currently proposing to increase its scale. How useful is this newsletter to the growers?

Various Grower/PCA: Newsletter is only moderately useful, at least for those in attendance. We compare your counts with our local observations. Some say they do not even read it.

LV/HW: Due to the importance of early season sprays for VCLH (in the absence of biocontrol), a big focus of the newsletter is to raise awareness about emergence of first brood nymphs. What if we reduced the detail of late season monitoring?

BO: I actually like the late season data, because in Lake County we often see low early season populations that only flare up later in the season.

JG: Yes I've also noticed these late season outbreaks in Lake County, it's strange that this seems to happen more in Lake but not in Mendocino.

LV/HW: What if we reduced the number of redundant sites within certain areas? For instance, we currently monitor 2 sites in Hopland and another nearby in McDowell Valley – is this necessary?

Various Grower/PCA: Yes it makes sense to eliminate redundant sites, especially if you can re-allocate your time/resources to more parasitoid releases or additional studies of VCLH. Also monitoring more common varieties would be better (i.e. Grenache is not that common, but you monitor it).

LV/HW: So then what are the key areas and varieties that you'd like us to monitor in each county?

Various Grower/PCA: In Mendocino, key areas would be Hopland, Talmage, and Ukiah. In Lake, it would be Middletown, Red Hills, and Big Valley. Varieties would include chardonnay, sauvignon blanc, cabernet sauvignon and petite syrah.

AW: It may also be useful to ignore the "negative data" sites – if the VCLH shows up there, you'll hear about it from growers, so no need to conduct regular monitoring.

LV: In line with that, maybe we could convert the newsletter to a blog that allows for commenting. Growers would then have a means to respond directly to each newsletter, give their perspective on the trends we're reporting, ask questions etc.

HW: Good idea, we can easily do that. How likely are growers/PCAs to comment?

Various Grower/PCA: We might comment, some say they probably would not.

HW: I've had similar response from growers when I'm asked to use social media, but since this blog version of the newsletter is easy to do, we can set it up and that at least provides the opportunity for comment/feedback.

JG: What about adding a site to monitor in the Pope Valley (Napa County)? You'd be on the front line of any movement in that direction.

HW: We could that. I'm planning parasitoid surveys in Pope Valley this year.

GM: I suggest adding a site in Anderson Valley. VCLH is not there yet.

AW: Previously there were no leafhoppers in Anderson Valley, but I've been seeing more over the years.

LV/HW: So I think we'll conduct detailed monitoring at a smaller set of sites in 2017, but focus on key regions and varieties. Maybe we could use the overwintering leafhopper dataset to get an idea of where to expect high densities in 2017?

HW: I sampled overwintering leafhoppers at 17 sites in December 2016. I'm planning to do this again in February to see how populations change from early to late winter. I can sample at all candidate sites in February (possibly 25+ sites) and then we can select a subset for regional monitoring based on the overwintering data. We could even select a subset that includes multiple sites in each region within each county (e.g. 3 sites in Hopland) and after 2 weeks of monitoring with sticky-traps in April, we could take the best site from each region (i.e. highest densities) and drop the others.

[AgUnlimited and Fetzer will send HW/LV a large list of sites to consider for monitoring]

(2b) Parasitoid Release Program

HW: This mostly involves our work at the UC Berkeley greenhouse. As mentioned, we're planning to release *A. daanei* earlier in the season, in higher densities and at a greater frequency than in 2016. We'll target sites with high densities of VCLH, which we'll determine based on the work to identify sites for regional monitoring.

(2c) Outreach and Education
HW: We included plans in the DPR proposal to generate educational materials, such as pest identification cards. Would these be useful? If not, what would you like to see?

AW: I think there are enough educational materials online and in print. We don't need any more, especially if you can re-allocate your time to other work on the VCLH.

Various Grower/PCA: Some others feel the same way.

BZ: I'd like to see more information about generalist predators as well as pictures of *A. daanei* and various stages of VCLH eggs. Online would be fine.

HW: We can do that.

LV: What about information on pest identification in Spanish?

MT: That would be useful to us, maybe a small poster we can place in a public area.

LV: Yes we can work on that.

(2d) Ecological Modelling
HW: This is an effort to better predict VCLH outbreaks. We were thinking about taking data from the regional monitoring effort and relating it to key agronomic and environmental variables. Working with the Hopland Research and Extension Center and the ANR Informatics and GIS Program, we have already made attempts to generate interpolated maps of pest densities. These required more data points than we had collected in the 2016 regional monitoring. To my understanding, quality modeling like this requires a lot of independent data points. We could possibly collect a separate dataset with a large group of collaborating growers.

AW: I don't see the point of models for a project like this. Weather is modeled all the time with the most sophisticated tools, and it still rains. As with previous objectives, I think it'd be worthwhile to reallocate efforts to research and work that is more meaningful for management and increasing biological control.

GM: We also know a lot about the spread of this pest already – it was basically moved around by certain large growers transporting equipment between properties throughout the county.

Various Grower/PCA: Generally agree with AW and GM. A larger degree of collaboration to collect this other dataset would be difficult due to time constraints. The blog option that was suggested may be a better way to garner new information about VCLH distribution and where outbreaks are occurring.

HW: Ok I can discuss this with DPR.

LV/HW: Thank you all for coming today, we greatly appreciate your collaboration and input on this project. We'll be following up with you all to identify sites for regional monitoring.

Meeting concluded at 10:57am