

REGIONAL MONITORING EFFORT

This season we are monitoring the development of Virginia creeper leafhopper (*Erythroneura ziczac*) and Western grape leafhopper (*Erythroneura elegantula*) populations.

Mendocino County: We are monitoring 7 sites, located in McDowell Valley, Hopland, Ukiah/Talmage, Redwood Valley and Potter Valley. Virginia creeper leafhopper (VCLH) is currently not found in Redwood Valley or Potter Valley. The Hopland/McDowell sites are monitored by Lucia Varela and all other Mendocino County sites by Ryan Keiffer.

Lake County: In collaboration with local Pest Control Advisors and Vineyard Managers Broc Zoller, Bill Oldham and Randy Krag we began on May 27 to monitor 5 sites in Lake County, located in the Upper Lake, Scotts Valley, Finley, Kelseyville and the Red Hills areas. This will be a simplified monitoring effort that includes weekly nymph counts and monthly evaluations of egg deposition and parasitism rates.

Project Website: Additional information about the Virginia creeper leafhopper research program in Mendocino and Lake County can be found on our project website (<http://ucanr.edu/sites/vclh>).

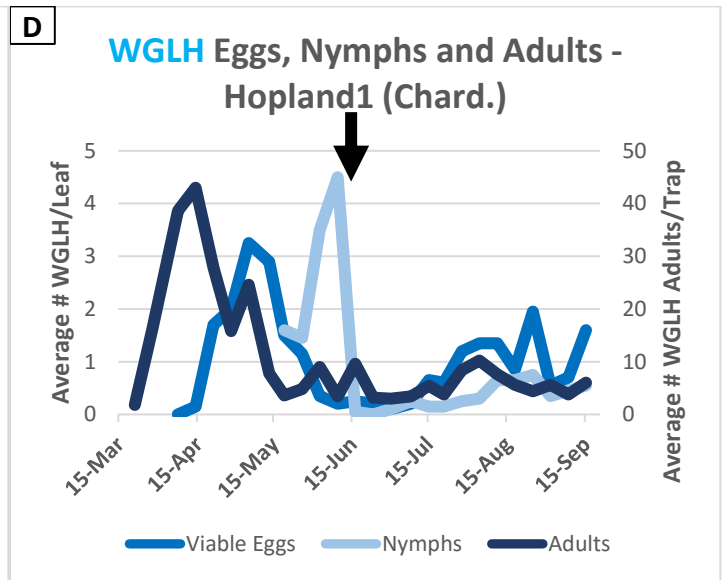
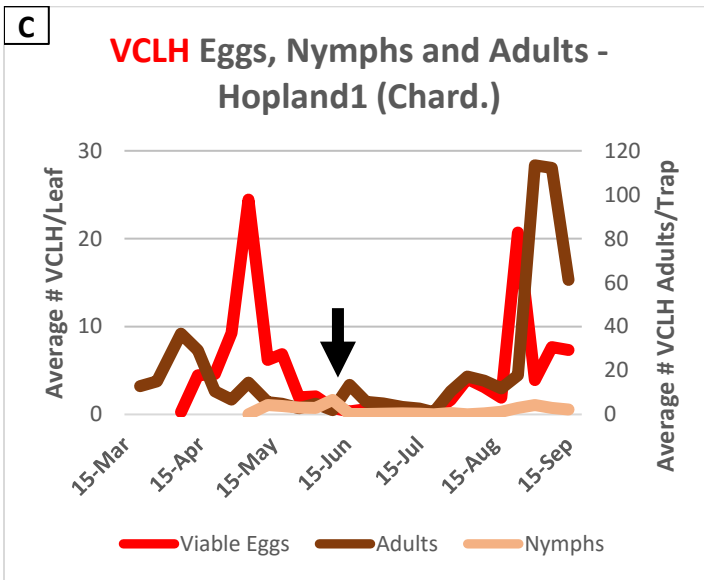
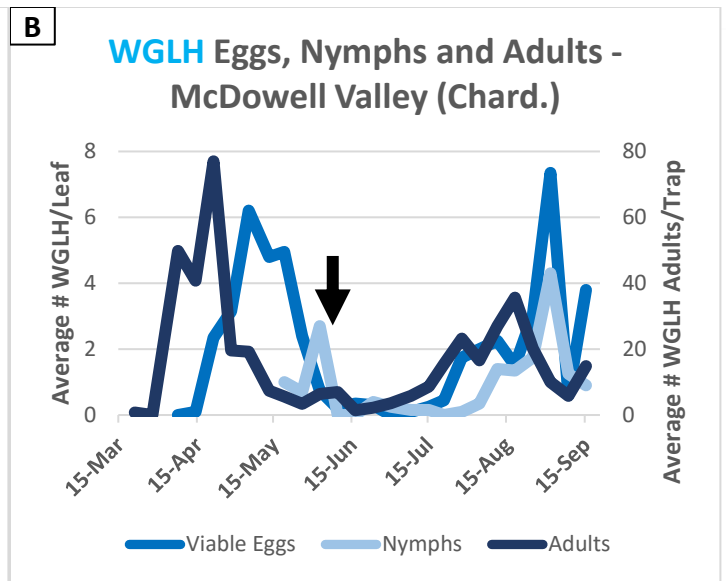
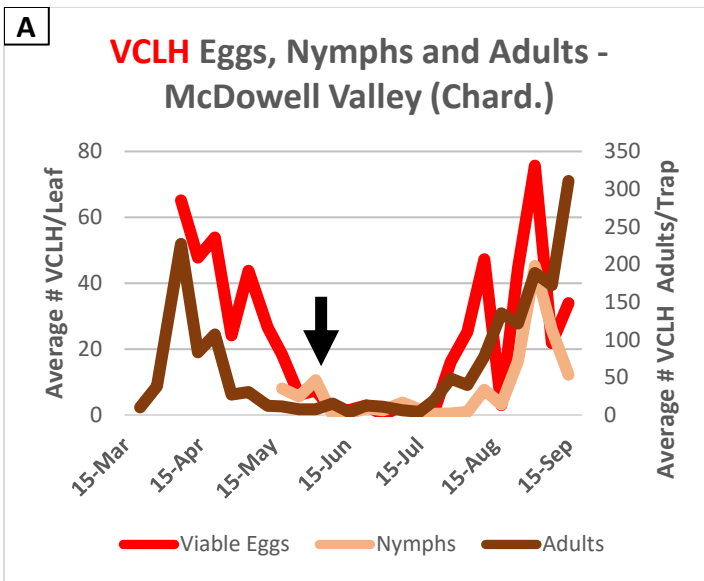
MENDOCINO COUNTY MONITORING

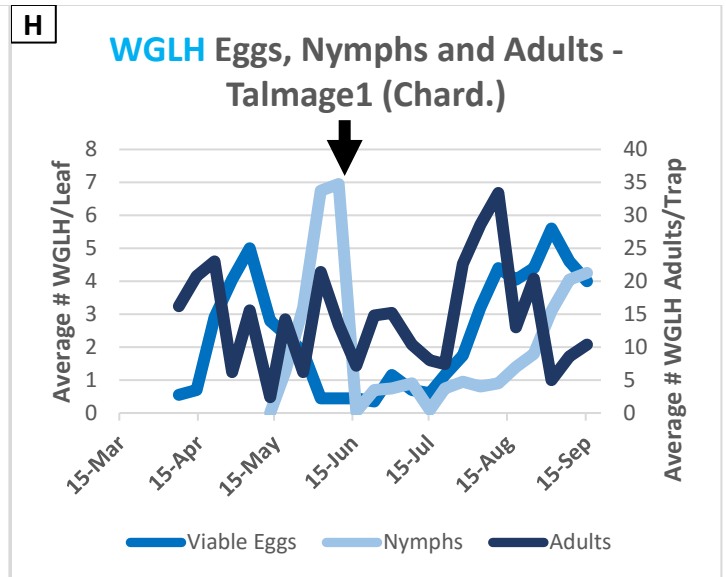
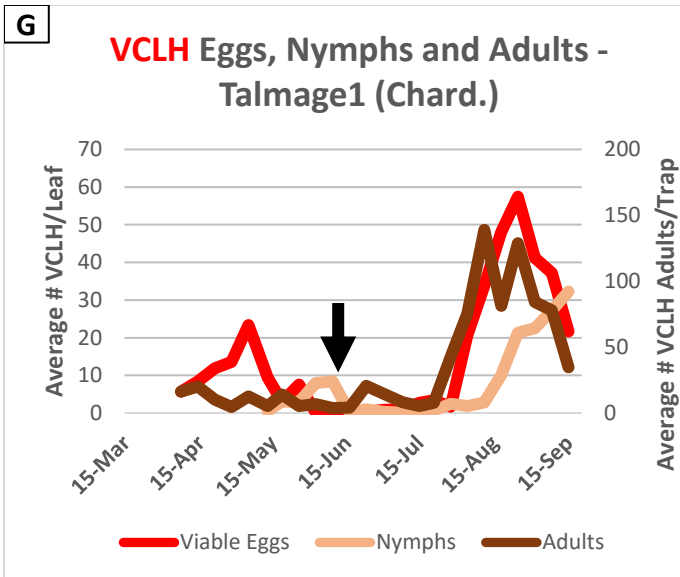
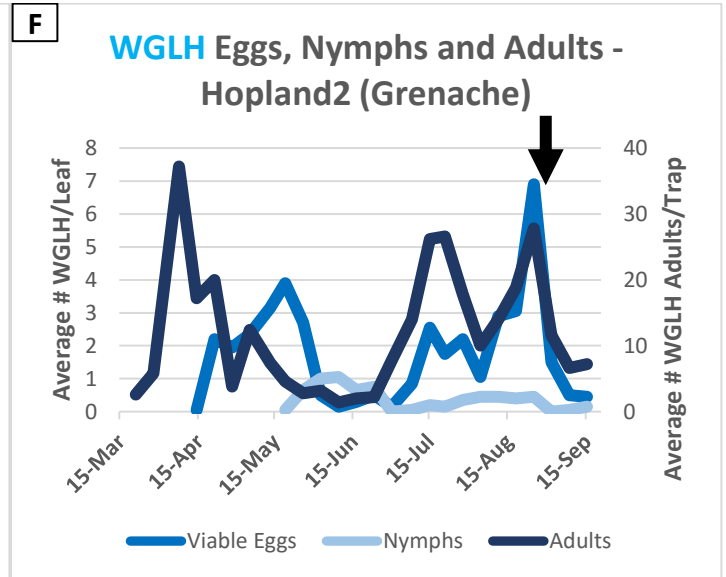
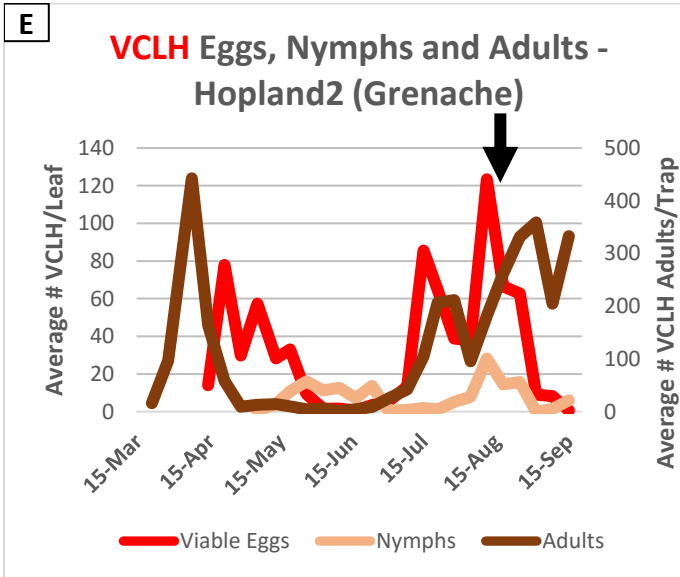
Leafhopper adults are now ovipositing higher up in the vine canopy and so we are now monitoring leafhopper populations on the leaves in the mid-canopy.

VCLH and WGLH Adults, Viable Eggs and Nymphs

Densities of VCLH adults remain elevated at most sites while WGLH adult populations have peaked and are now relatively low, with the exception of Potter Valley, where WGLH adult densities may be rising again. Nymph densities of both VCLH and WGLH appear to have peaked (or are currently peaking) as well. For the WGLH, the current nymph population represents the second brood whereas for VCLH the nymphs are likely third brood.

Both VCLH and WGLH nymph populations were reduced during the first generation brood (i.e. May/June) at “McDowell Valley”, “Hopland1”, “Talmage1”, “Talmage2” and “Redwood Valley” after insecticide applications (arrows in Fig. 1 indicate spray date). However, at this point in the season we have seen an increase in nymph populations at most of the sites sprayed during the first generation. Nymphs were also affected by a more recent insecticide application at the “Hopland2” site. OMRI certified materials were used at the “McDowell Valley”, “Hopland1”, “Hopland2”, “Talmage1” and “Redwood Valley” sites, but not at the “Talmage2” site.





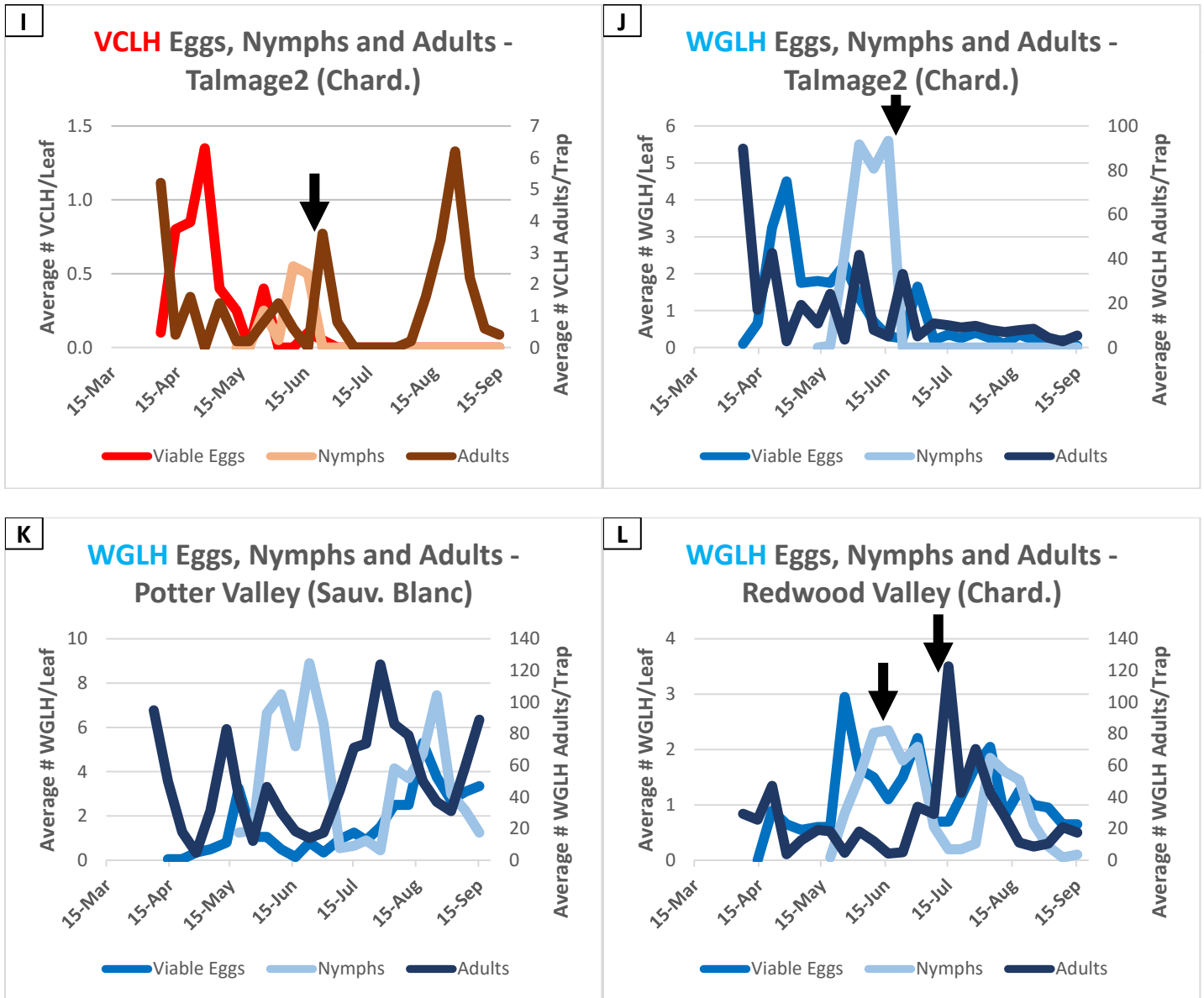


Fig. 1. Average number of leafhopper adults, viable eggs and nymphs graphed by leafhopper species (VCLH and WGLH) in seven vineyards in Mendocino County. Leafhopper populations continue to follow trends similar to what was seen earlier in the season, with high VCLH populations in the Hopland and McDowell Valley areas and high WGLH populations in the Redwood Valley and Potter Valley areas. Primary axis (left) is scaled for viable egg and nymph densities, secondary axis (right) is scaled for adult densities. Note the difference in the Y-axis between the graphs. Arrows indicate insecticide application at a given site.

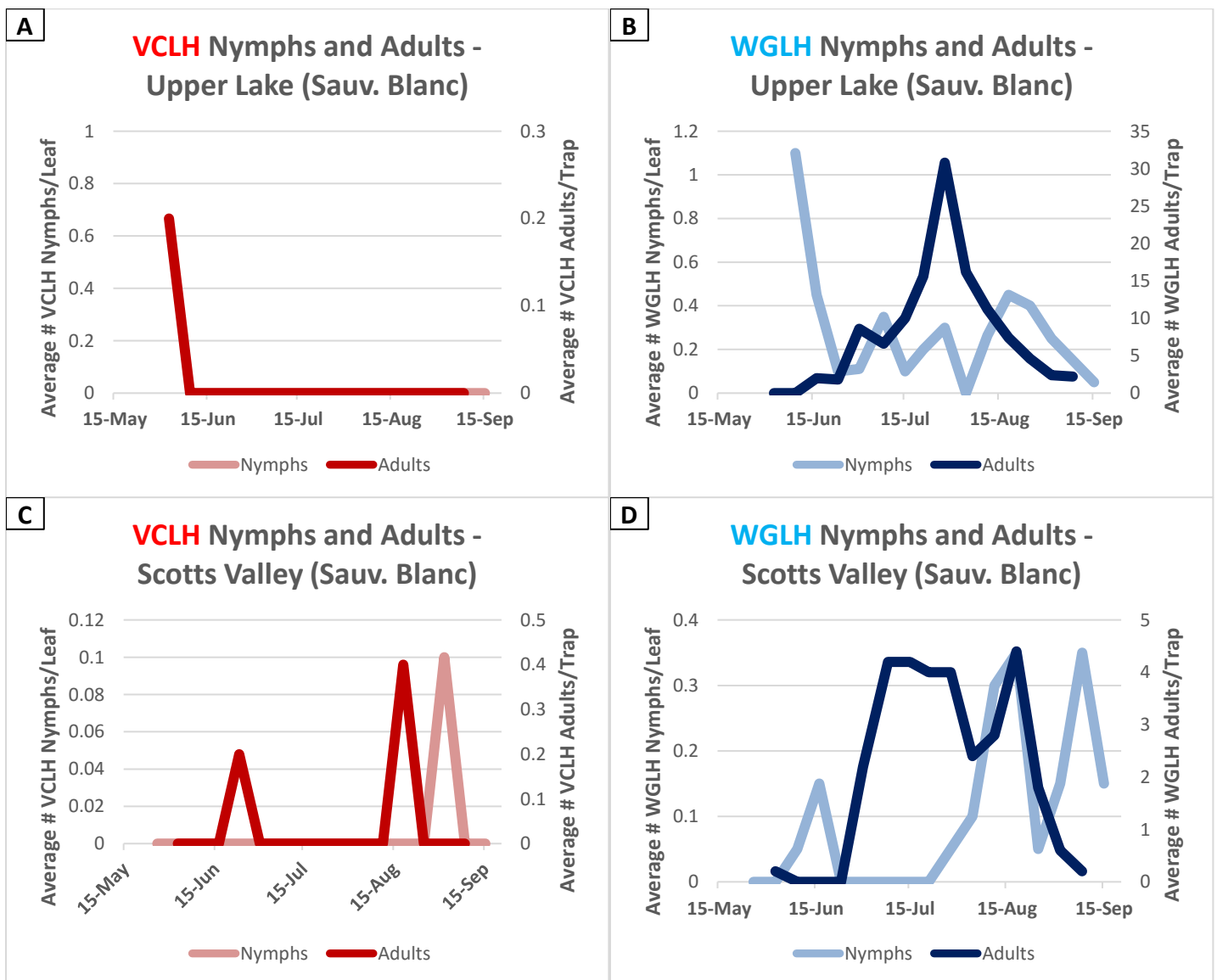
LAKE COUNTY MONITORING

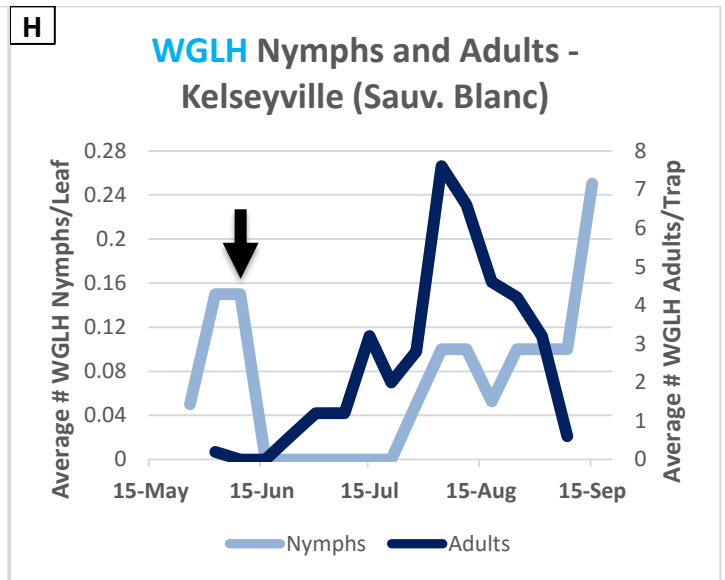
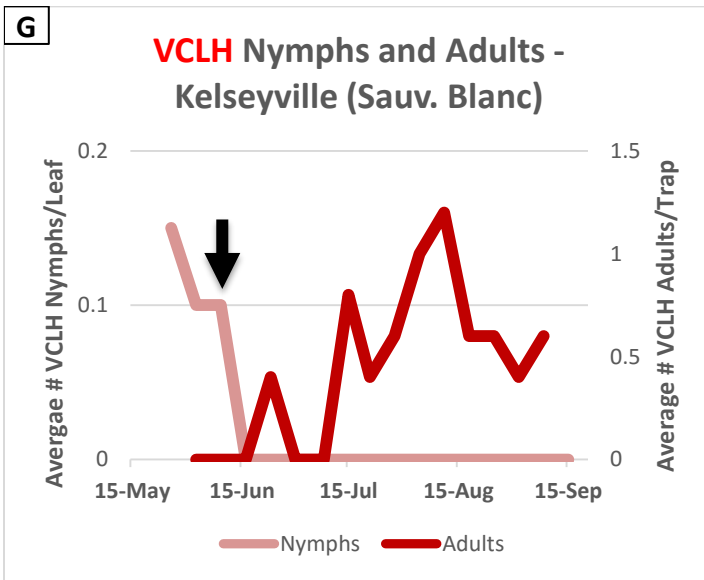
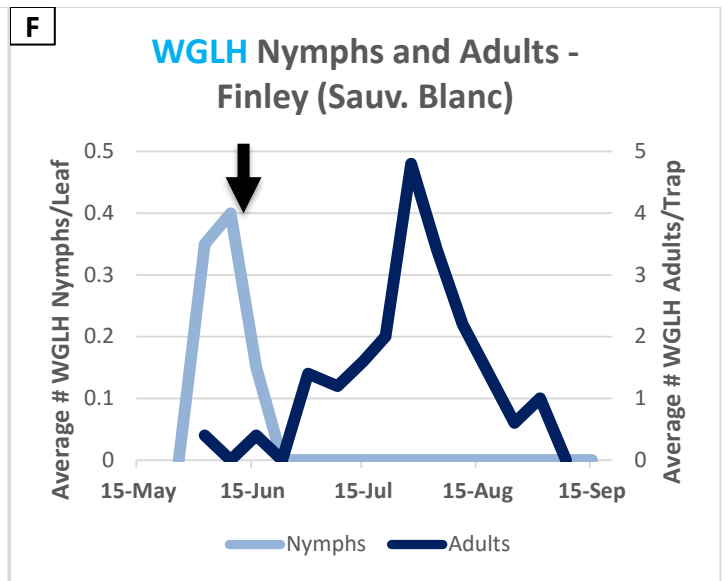
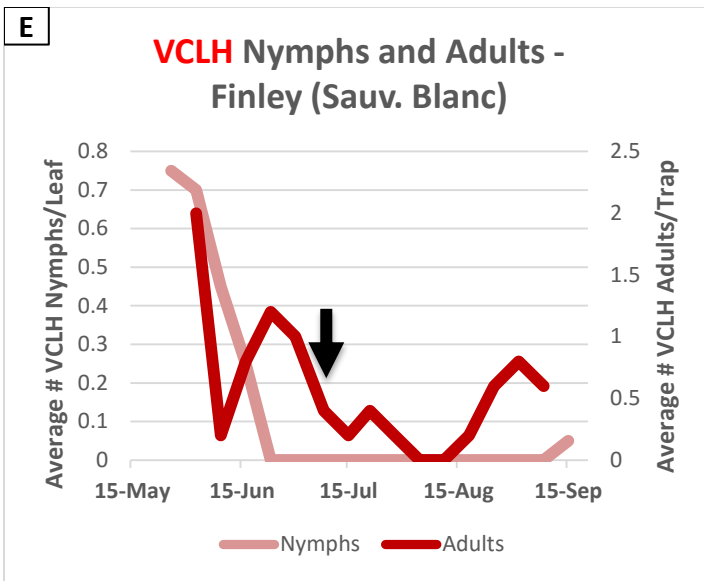
VCLH and WGLH Adults and Nymphs

VCLH densities are generally low and more variable across all sites (≤ 3 adults per trap). No VCLH nymphs have been observed since mid-July, with the recent exception of Scotts Valley and Finley, but densities are still very low (< 0.5 nymphs per leaf). These VCLH nymphs represent the third brood.

WGLH adult populations have peaked at all sites and we are now seeing nymph densities peaking (or just passed peak) at most sites with the exception of "Finley" (no WGLH nymphs observed since June). These nymphs represent the second WGLH brood.

VCLH and WGLH nymph populations were reduced during the first generation brood at the "Finley" and "Kelseyville" sites due to insecticide applications in early June (arrows in Fig. 2 indicate spray date). In both cases a conventional product was applied.





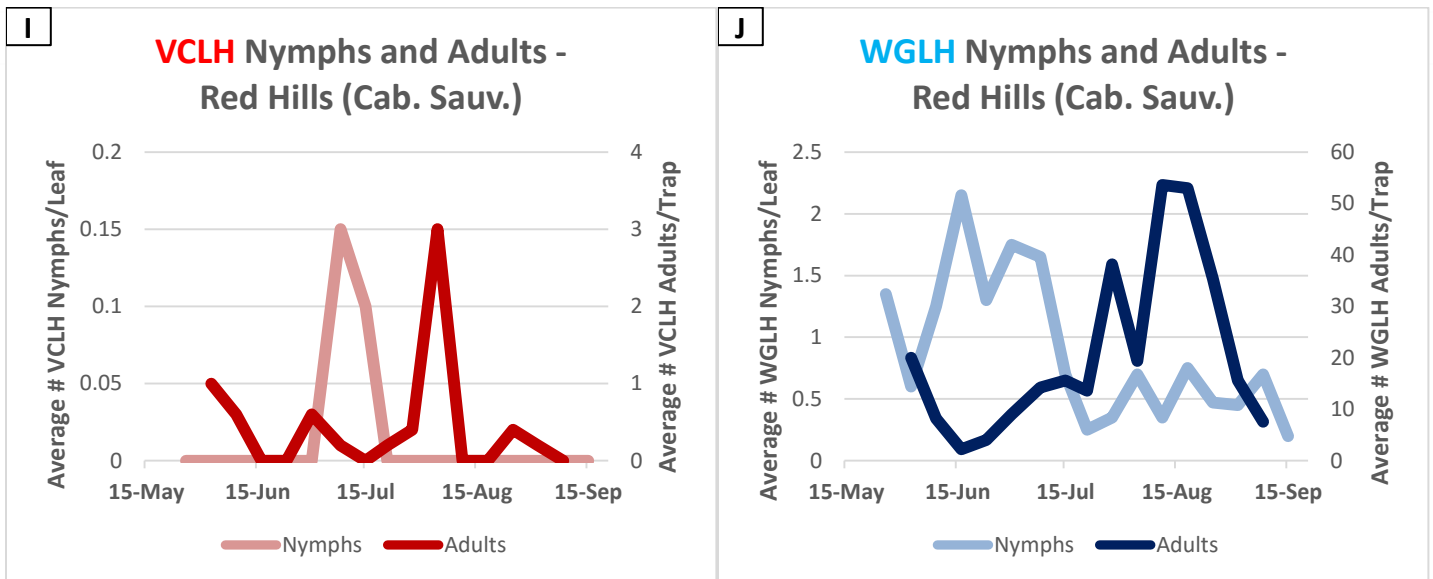


Fig. 2. Average number of nymphs and adults in five vineyards in Lake County from May 26 to present. WGLH adult populations have peaked (or are currently peaking) while densities of VCLH adults are generally low and more variable. Primary axis (left) is scaled for nymph densities and secondary axis (right) is scaled for adult densities. Note the difference in the Y-axis between the graphs. Arrows indicate insecticide application at a given site.

LEAFHOPPER NYMPH SPECIES IDENTIFICATION

Virginia creeper and Western grape leafhoppers are approximately the same shape, size (0.03 - 0.10 inch / 0.8 - 2.5 mm) and color (white/yellow) with the key exception that VCLH nymphs develop 4 distinct brown/red spots on their thorax as the nymphs mature. The spots don't appear until the nymph has molted at least once, so the early stage (1st instar) of both species is identical. The spots on VCLH nymphs are light orange on 2nd/3rd instars and become brown/red on the 4th/5th instar. At this time of the year, leafhopper nymphs can be found on fully-expanded, mature leaves in the mid-canopy.



Western Grape Leafhopper



Virginia Creeper Leafhopper

Photos: Jack Kelly Clark, UC IPM (left); Mike Poe, Comm. Services, ANR (right)

PARASITOID RELEASES

Our previous research has shown that a population of the egg parasitoid *Anagrus daanei* from the Sacramento Valley will readily attack VCLH eggs. Last year we recorded a significant increase in VCLH parasitism following the release of these *A. daanei* into a vineyard in Hopland. This year we are making *A. daanei* releases throughout Mendocino and Lake County. Releases are scheduled to take place approximately every week over the growing season. No parasitoids were released last week and no further releases are scheduled for 2016 in order to build up populations in our greenhouse colonies in preparation for the fall/winter period. We will provide updates about additional releases and follow-up evaluations of parasitism rates at the release sites as this work progresses.

PROJECT MEMBERS AND CONTACT INFORMATION

- Houston Wilson, Post-doctoral Researcher, Dept. Environ. Sci. Policy & Management, UC Berkeley, houston@berkeley.edu
- Kent M. Daane, CE Specialist, Dept. Environ. Sci. Policy & Management, UC Berkeley, kdaane@ucanr.edu
- Ryan Keiffer, Ag. Technician, UCCE-Mendocino County, rfkeiffer@ucanr.edu
- Glenn McGourty, Viticulture and Plant Science Advisor, UCCE - Mendocino County, gtmcgourty@ucanr.edu
- Lucia Varela, Area-wide IPM Advisor, UCCE - Sonoma County, lgvarela@ucdavis.edu
- Lake County PCAs and Vineyard Managers: Broc Zoller, peardoc@pacific.net; Bill Oldham, billoldh@comcast.net; Randy Krag, randyk@beckstoffervineyards.com

DISCLOSURE STATEMENT

Funding for this project has been provided in part through a grant awarded by the Department of Pesticide Regulation (DPR). The contents of this document do not necessarily reflect the views and policies of DPR, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.