

Arizona Department of Agriculture
AILRC Grants Program – Final Report for 2019
Project 19-01

Project title: **Area-wide Monitoring for Lettuce Insects**

Project Investigator: John C. Palumbo, University of Arizona, Yuma Ag Center

Location of Research: Yuma, AZ

Objective: *To continue for a sixth season an Area-wide Insect Trapping Network in the Yuma Valley, Gila Valley, Dome Valley and Wellton/Roll areas that will provide real time information for PCAs on adult insect activity of important insect pests.*

The *Area-wide Insect Trapping Network* was continued in 2018-19 for a sixth year, with numbers of trap and locations similar to the previous year. Information was gathered from a network of traps that were placed and monitored weekly from mid-August through March. A total of fifteen trap locations were situated in the Yuma Valley (6), Gila Valley (3), Dome Valley (2), Wellton (2) and Tacna/Roll (2) areas. Traps were located near or adjacent to the AZMET weather station when possible. The approximate location of traps in each valley was determined by a survey of Yuma growers and PCAs. At each site, pheromone traps were used to monitor for adult activity of corn earworm, beet armyworm and cabbage looper. In addition, yellow sticky traps were used to monitor whiteflies, aphids, thrips and leafminer adults. Traps were checked weekly and data was processed at the Yuma Ag Center. The data was organized and presented by species and trap location. Relative weekly trends were also presented across the season.

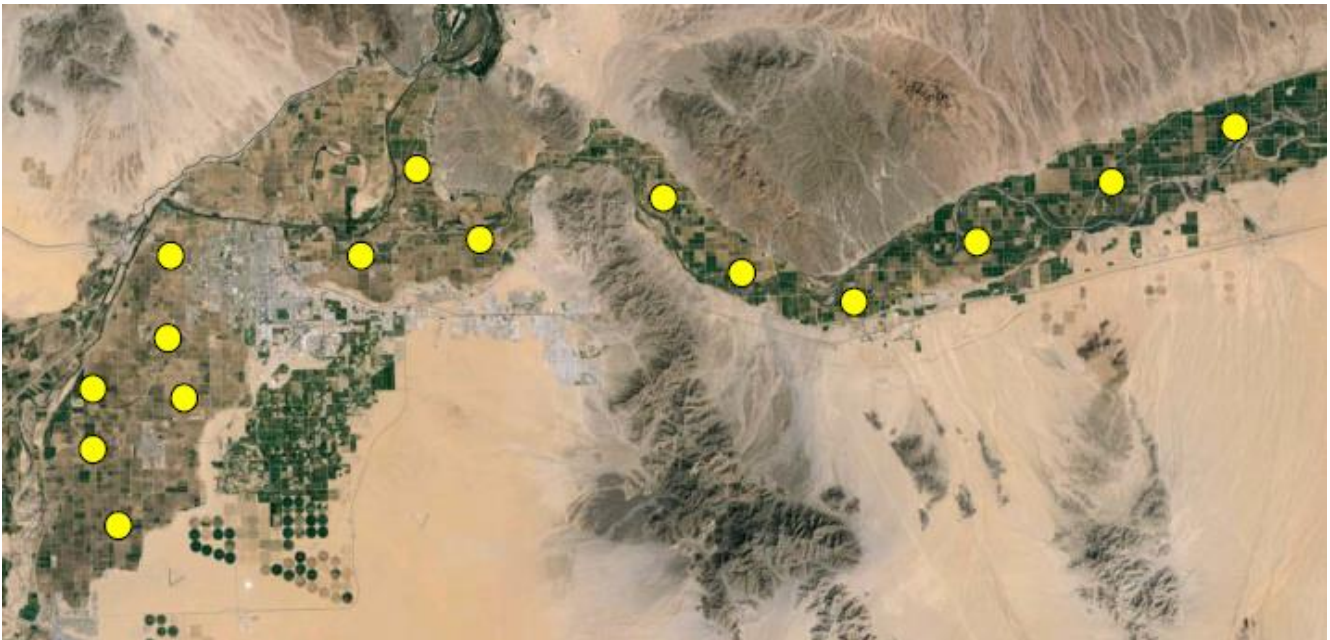
Real-time information on trap captures at each location was provided bi-weekly to all PCAs and growers who receive our Veg IPM Updates via email. PCAs and growers can request weekly updates via individual emails. However, all trapping data during the course of the 2018-2019 lettuce growing season was also assessable at any time through will UA Crop Information website <http://ag.arizona.edu/crops/crops.html>

The project was designed to measure the activity and movement of adult populations of several key pests. The project provided an indication of when pest activity (e.g., corn earworm moth flights) is increasing based on pheromone / sticky trap captures. The data is not intended to indicate field infestations, as trap data is largely a reflection of adult movement. If nothing else, the data may make PCAs aware of increased pest activity in some areas and encourage intensified scouting in susceptible produce fields. The pests monitored included: corn earworm, beet armyworm, cabbage looper using pheromone traps; aphids, thrips and whiteflies using yellow sticky traps. Below we present the locations of the 15 tapping locations as well as the seasonal counts of insects at each locations relative to results from the previous four seasons. In 2018-2019 we also included data from our Areawide Diamondback Moth Trapping Network.

Area-wide DBM Trapping Network Yuma, Arizona

Trap Locations

1	Tacna/Texas Hill	47E and Co. 2 St.
2	Tacna/Roll	38E and Co. 4 St.
3	Roll/Wellton	33E and Co. 7 St.
4	Wellton	27E and Co. 10 St.
5	Dome Valley	21E and Co. 8 St.
6	Dome Valley	17E and Co. 6 St.
7	East Gila Valley	10E and Hwy 95
8	North Gila Valley	Laguna Dam Rd and Co. 3 St
9	South Gila Valley	5E and 24 st.
10	Yuma Valley	Co. 14 and Ave D
11	Yuma Valley	Co. 20 and Ave G
12	Yuma Valley	Co. 17 and Ave J
13	Yuma Valley	Co. 14.5 and Levee Rd
14	Yuma Valley	Co. 12 and Ave F
15	Yuma Valley	Co. 8 and Ave E



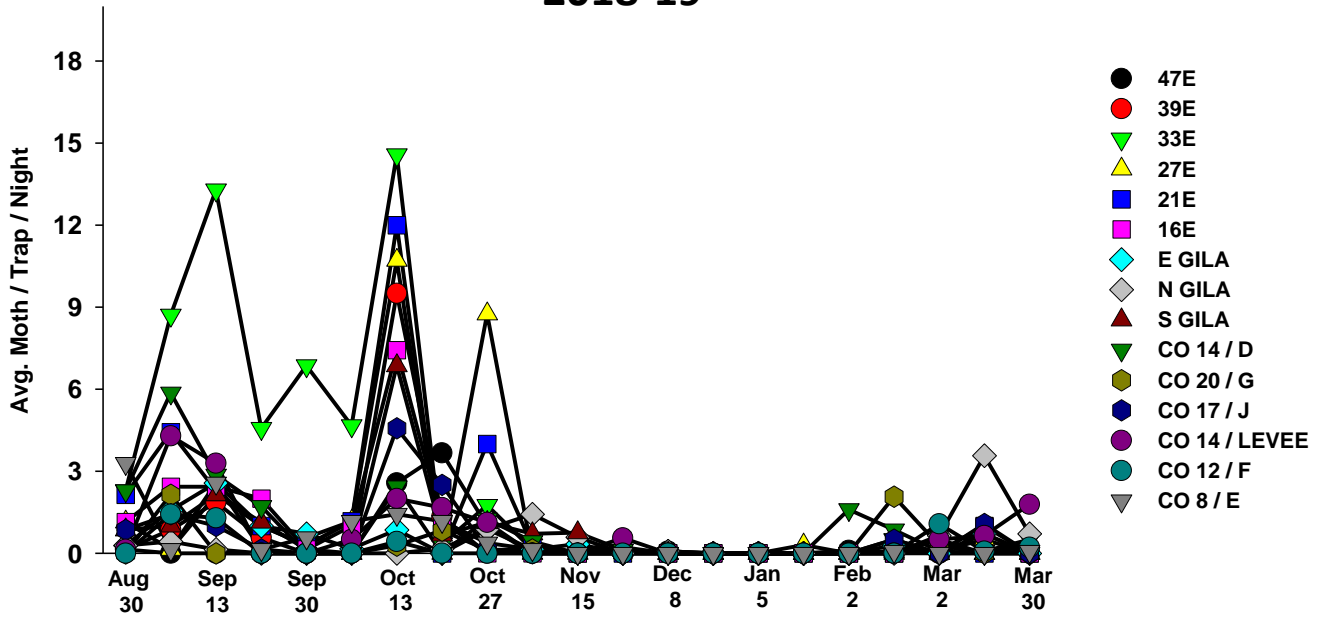
Area-wide Insect Trapping Network

North Gila Valley Location



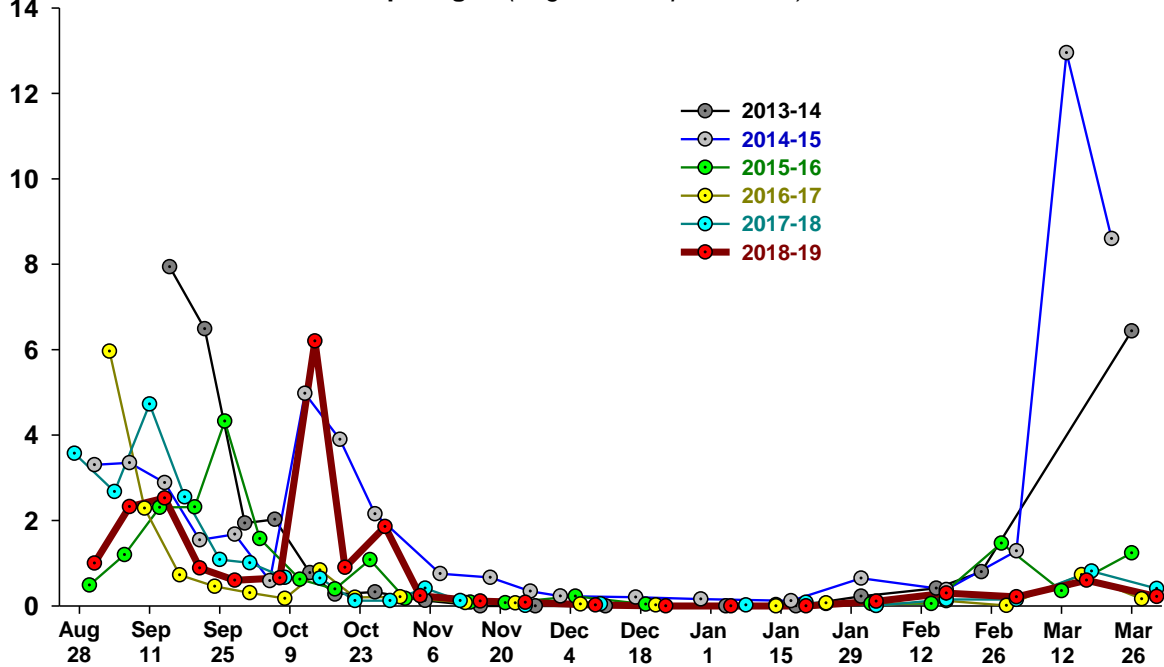
Corn Earworm

2018-19



6-Yr Average

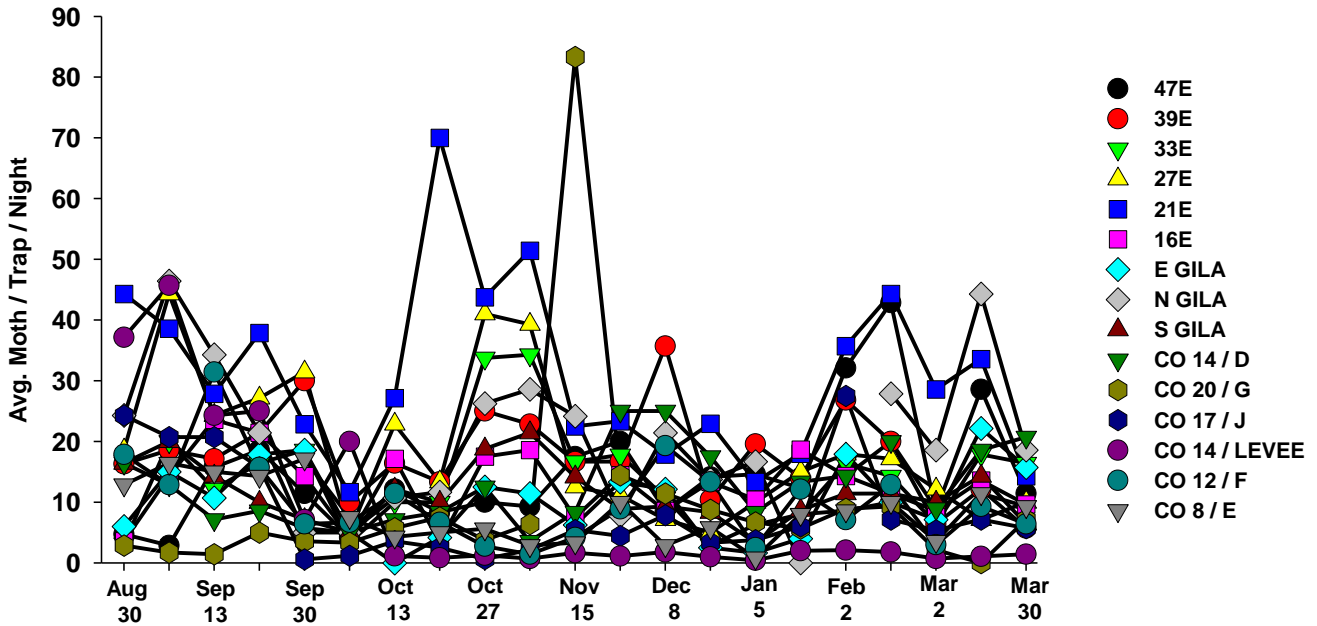
Corn Earworm Moths / Trap / Night (Avg. of 15 trap locations)



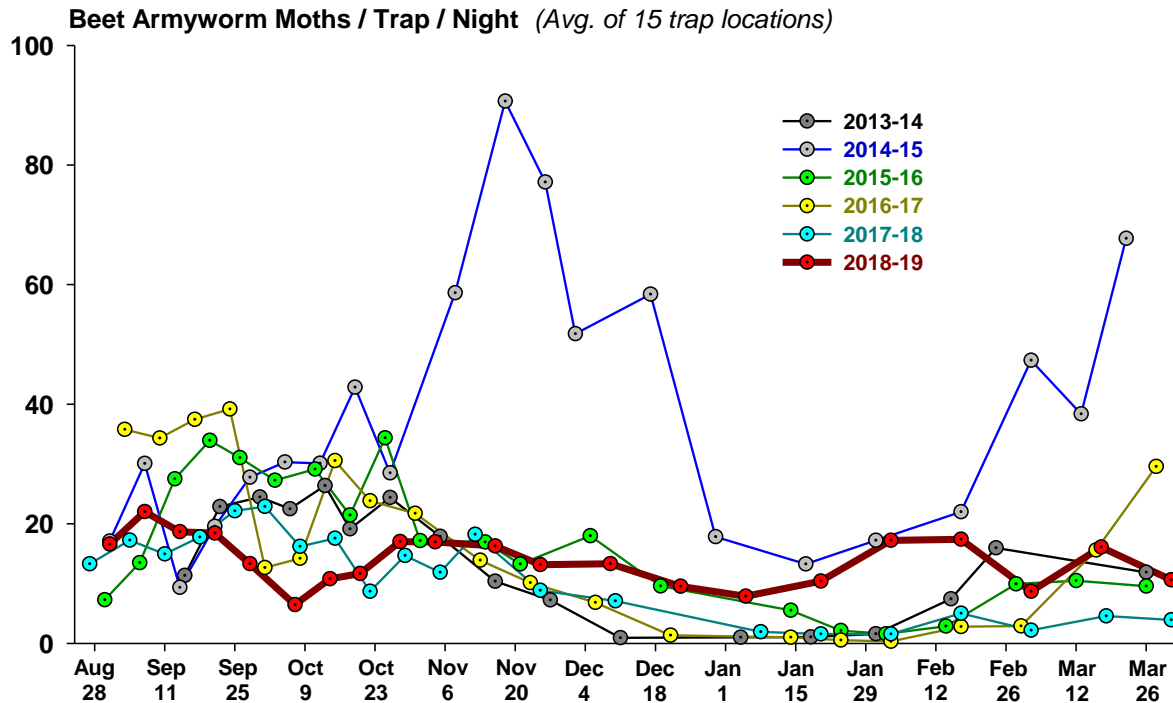
Corn Earworm (CEW): Overall, 2018-19 started off as an average year for CEW moths. However, moth activity was higher than all previous years in early October, suggesting populations buildup prior to first lettuce harvests. Trap catches in the spring were very low relative to Feb and Mar of 2014 and 2015 which is a key period during the produce season when lettuce is at highest risk from corn earworm. There were no reports of CEW larvae causing problem in commercial fields in the fall of 2018 or spring of 2019. These data were made available to PCAs and growers' season long.

Beet Armyworm

2018-19



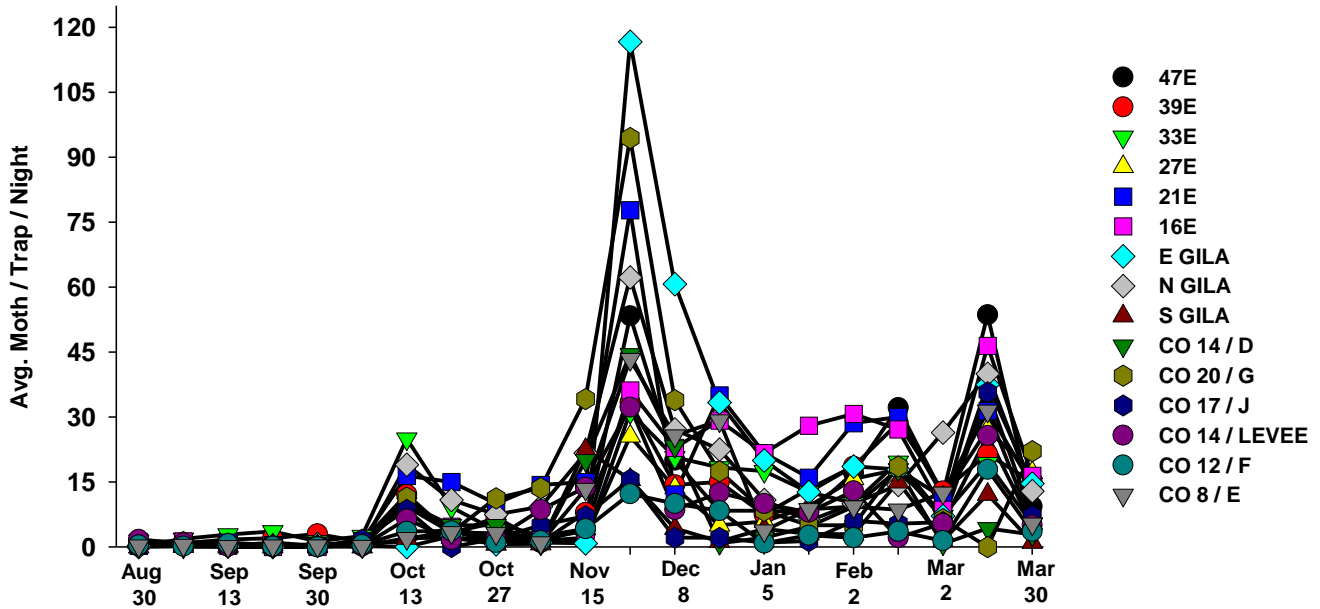
6-Yr Average



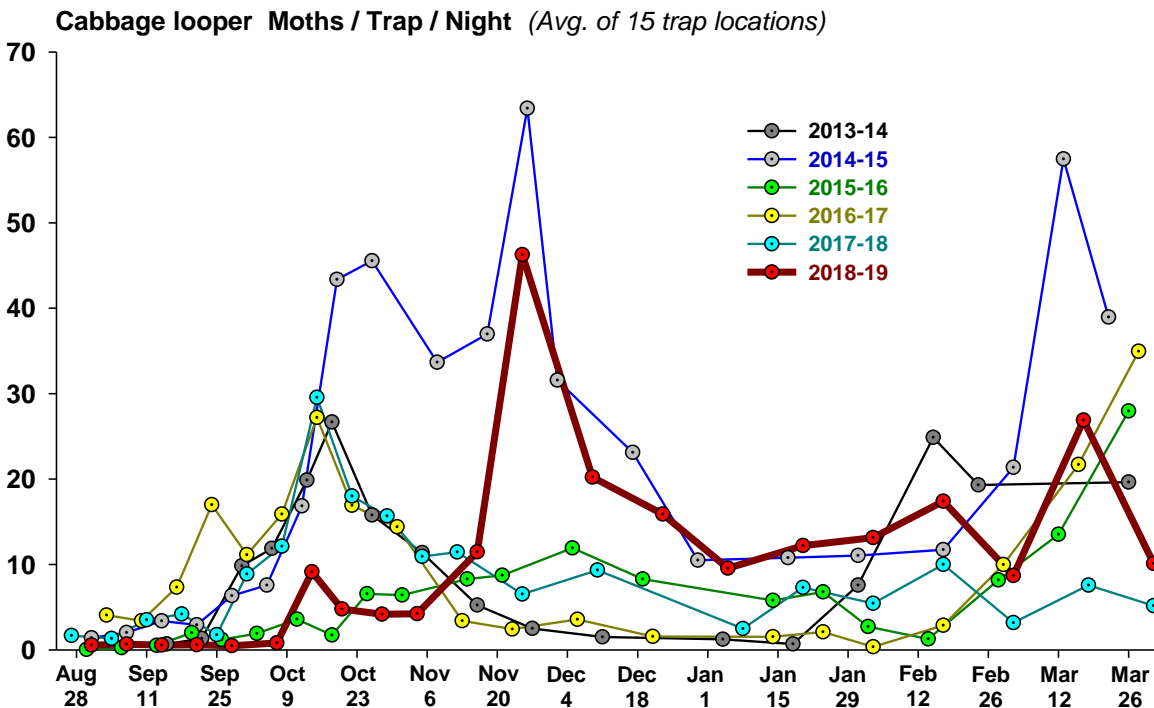
Beet armyworm: Temperatures were high during September and likely account for the average trap catches during the fall 2018 but began to decrease and remain low in early October with unusually cool temperatures. Moth populations remained steady through the rest of the produce season, and slightly above average during the spring. Larval infestations as reported by PCAs in fields were very after October, but reported higher in Feb and Mar.

Cabbage Looper

2018-19



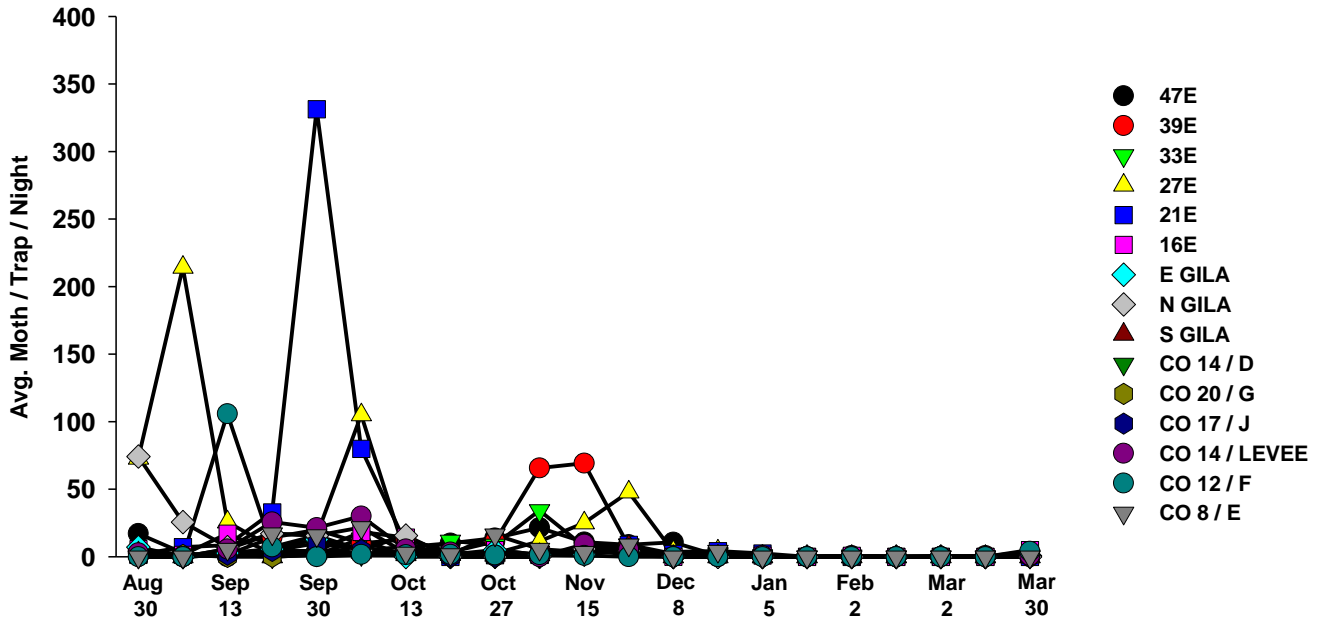
6-Yr Average



Cabbage looper (CL): With the cooler fall temperatures in 2018, cabbage looper moths were less active during the fall compared to the previous season. CL moth activity peaked for a short duration in late November and was much higher in spring lettuce compared to previous years. These trends were consistent with cabbage looper larval populations in commercial fields where PCA's reported having to treat for looper less in the fall, but about average for the spring.

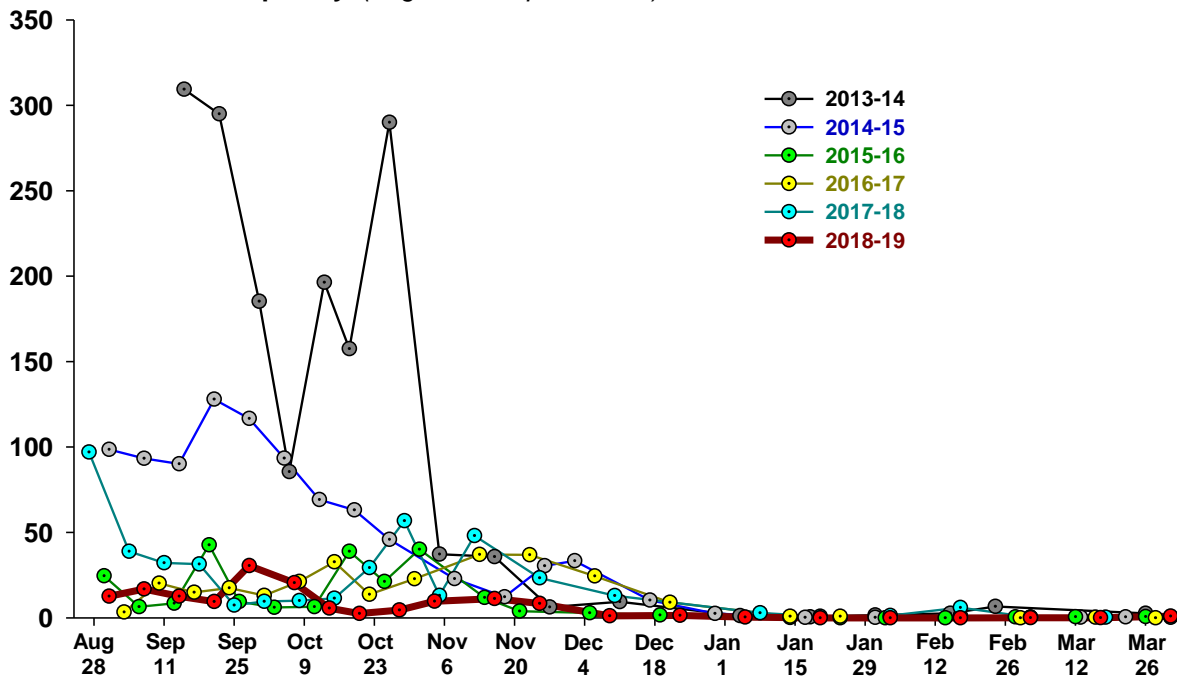
Whiteflies

2018-19



6-Yr Average

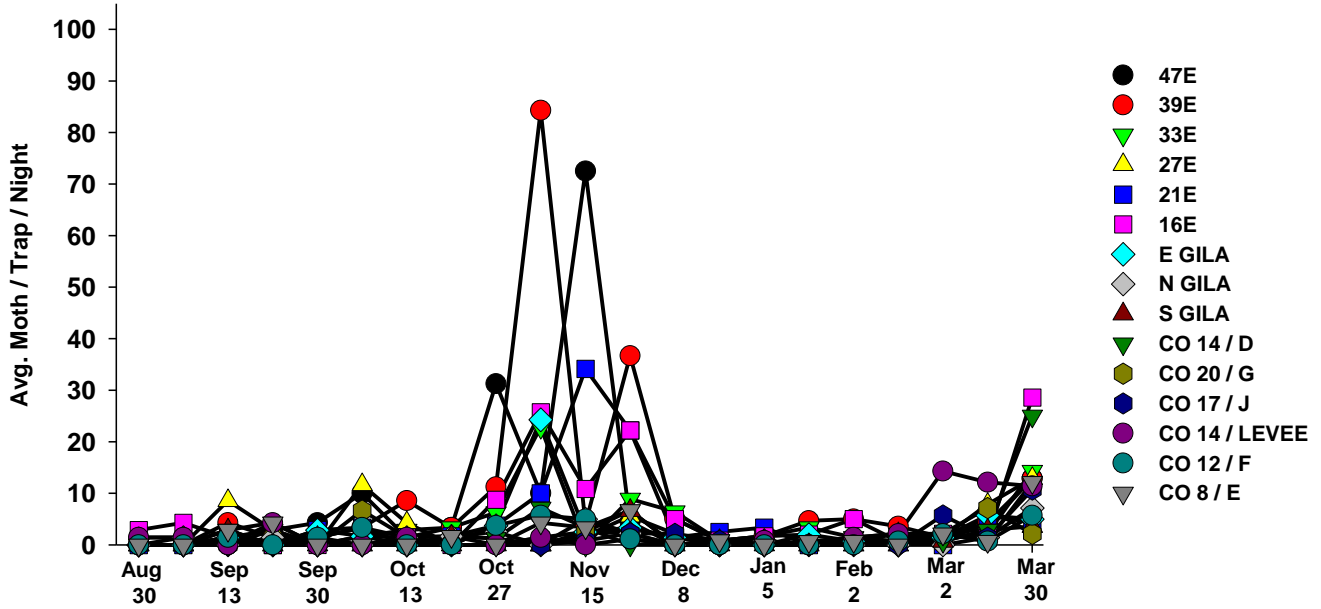
Whiteflies / Trap / Day (Avg. of 15 trap locations)



Sweet potato Whitefly: Whitefly movement is greatest during the fall when adults are migrating out of cotton, alfalfa and melons onto lettuce. In contrast, whiteflies move very little during the spring. In 2018-2019, whitefly movement was significantly low throughout the produce season, with peak activity in late September consistent with late storms occurring. Traps with the peak whitefly counts were near cotton fields or melons fields that had been harvested. Traps counts reflect PCA reports of light nymph infestations in fields.

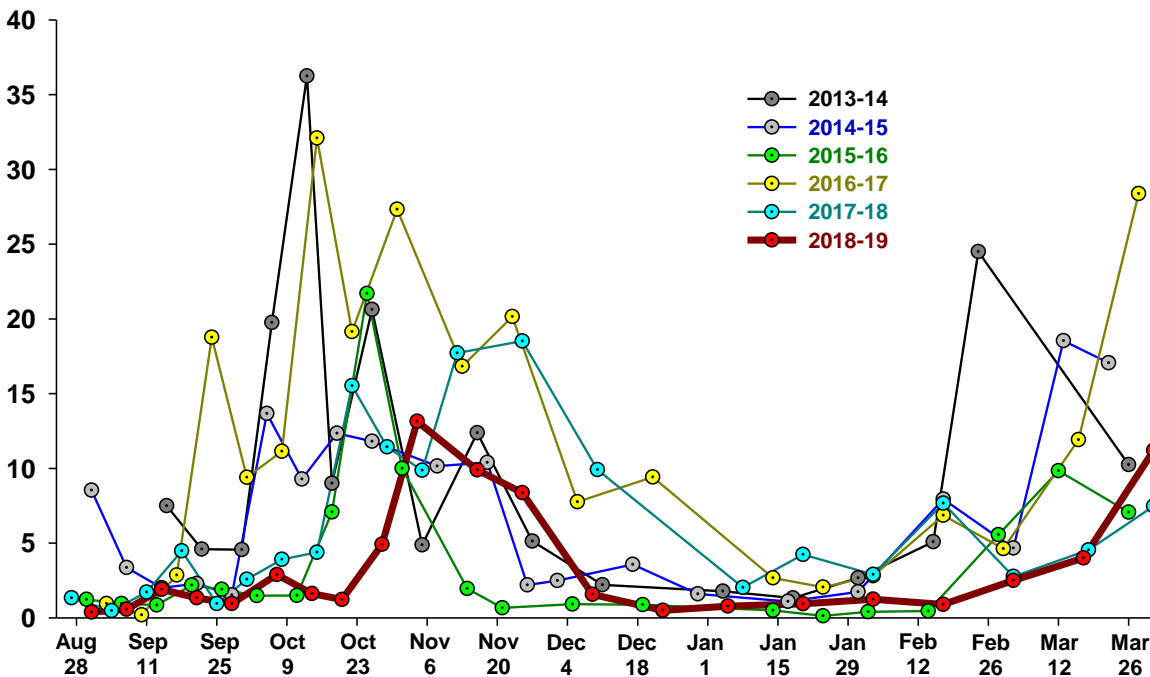
2018-19

Thrips



6-Yr Average

Thrips / Trap / Day (Avg. of 15 trap locations)

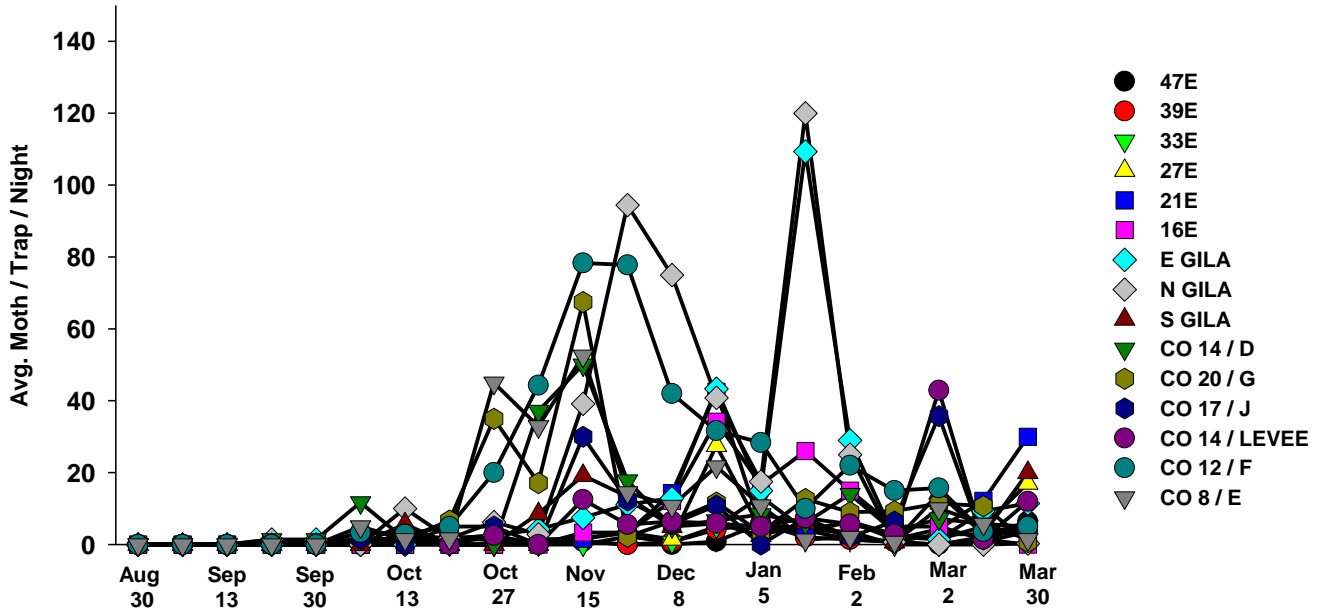


Western Flower Thrips:

Thrips movement in the early fall of 2018 was lower than normal and peaked later than in previous years. The results still show that adult thrips tend to move primarily in October/November (from alfalfa, melons and cotton) and then again in Feb-Mar (with the reduction in produce acres). Adult movement during the spring 2019 was unseasonably low until March due to higher than normal rainfall during Jan and Feb that tends to suppress thrips numbers. Overall, reports from PCAs were that 2018-19 was a light thrips year.

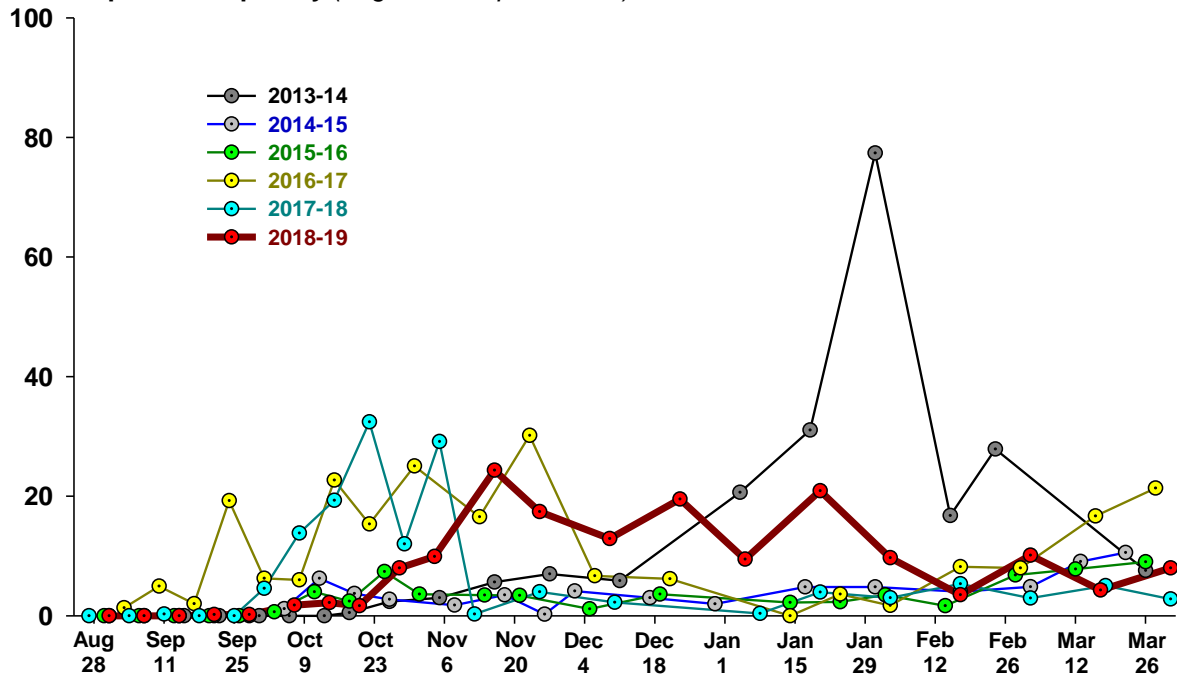
Aphids

2018-19



6-Yr Average

Aphids / Trap / Day (Avg. of 15 trap locations)

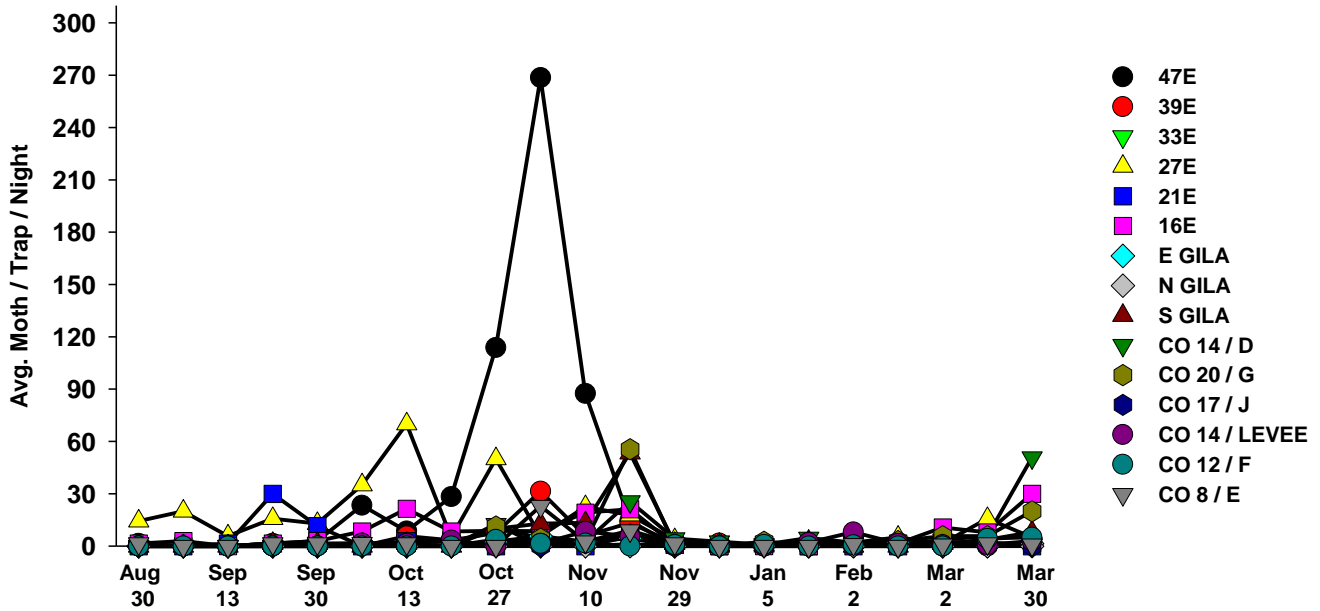


Aphids:

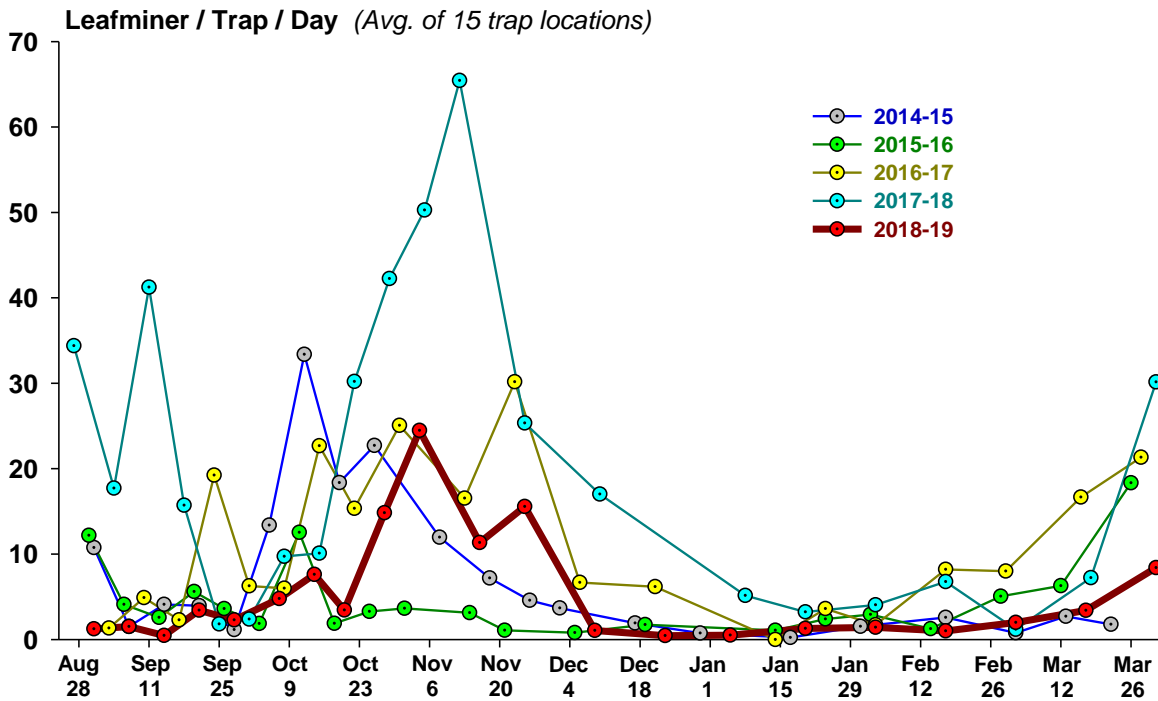
Fall movement of aphids was delayed in fall 2018, not peaking until mid-November. However aphid flights remained steady throughout the winter, which is unusual compared with previous years. This is likely why aphid colonization in produce fields was higher this season, and PCAs indicated that aphid infestations were troublesome and required significantly more control than in previous seasons. The higher rainfall this winter certainly contributed to the increase in aphid pressure in 2018-19. As expected, trap counts were generally higher in the Yuma and Gila Valleys. Green peach aphid was the predominant species found in traps and fields.

Leafminers

2018-19



6-Yr Average



Liriomyza Leafminers:

Leafminer adult activity was considerably lighter in fall 2018 than in previous years, again, a reflection of the cooler fall temperatures. Leafminer activity was consistently low throughout the winter and spring compared with previous seasons. The majority of adults trapped were *Liriomyza sativae*, although *Liriomyza trifolii*, was observed on traps in some locations, particularly in the fall.