

Arizona Department of Agriculture
AILRC Grants Program – Final Report for 2018
Project 18-04

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 fifth 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.*

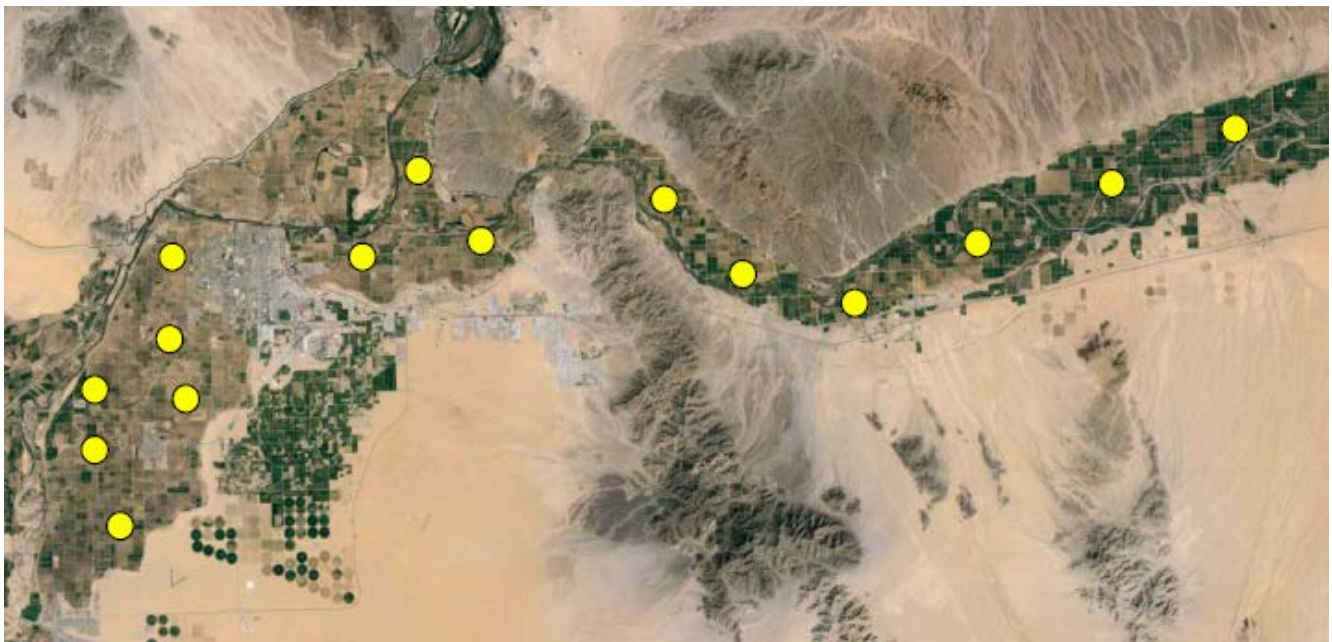
The *Area-wide Insect Trapping Network* was continued in 2017-18 for a fifth year, with numbers of trap and locations similar to the previous year. Information was gathered from a network of traps that were placed and monitored weekly from mid-August through March. A total of fifteen trap locations were 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 2015-2016 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 a number of 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.

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



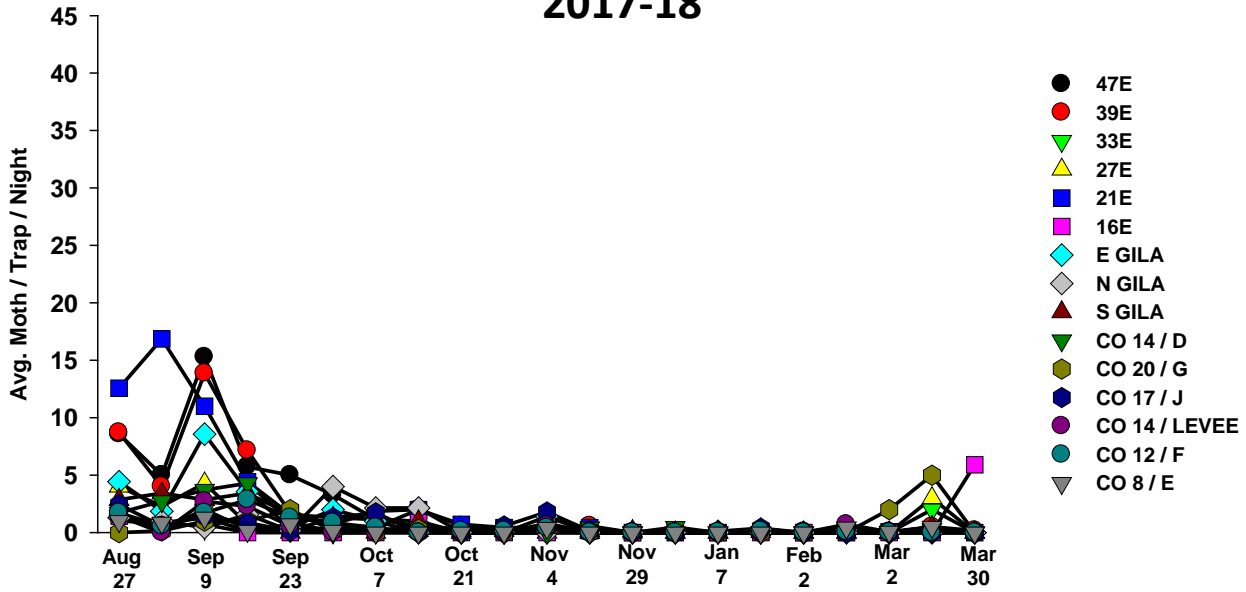
Area-wide Insect Trapping Network

North Gila Valley Location

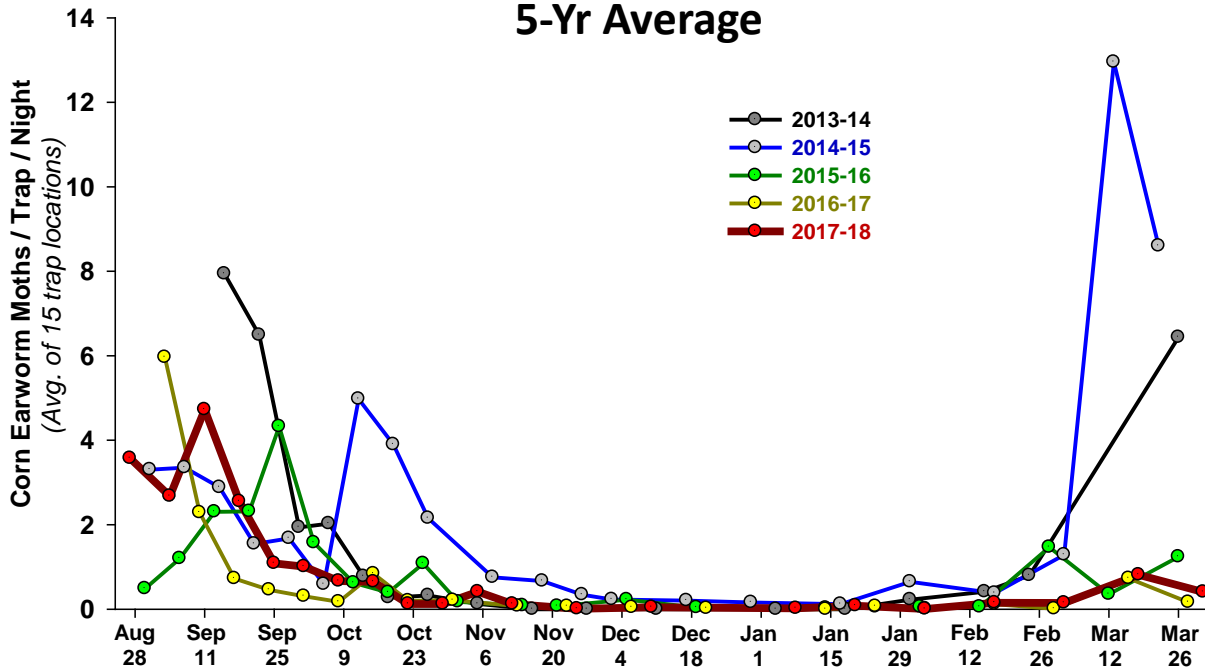


Corn Earworm

2017-18



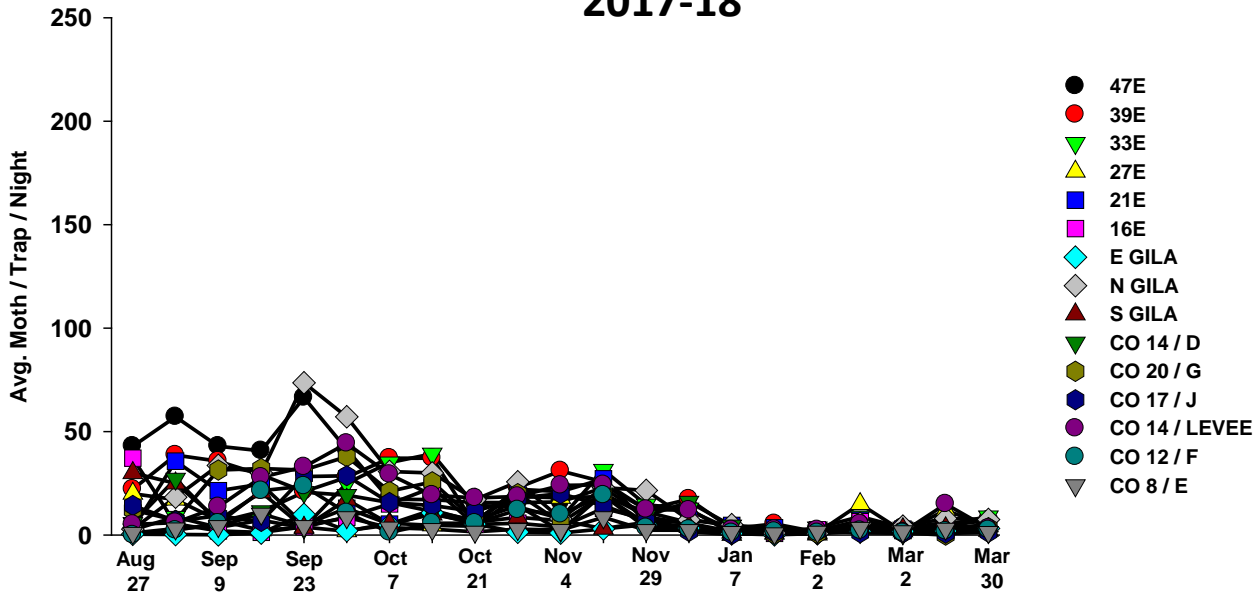
5-Yr Average



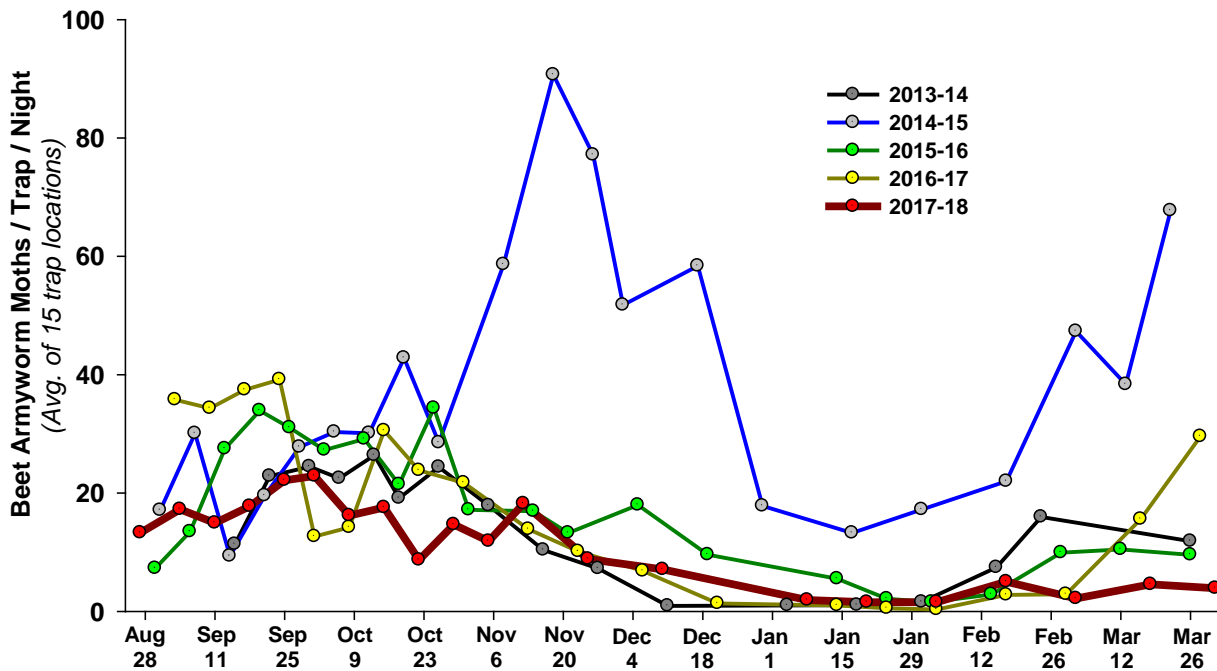
Corn Earworm: Overall, moth activity in 2017-2018 was quite low compared to previous years. However, moth activity was higher than previous years in early September, but of not much consequence as lettuce planting is just beginning at this time. In previous years, (particularly 2014 and 2015) trap captures were higher in October and February which are the key periods 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 2017 or spring of 2018.

Beet Armyworm

2017-18

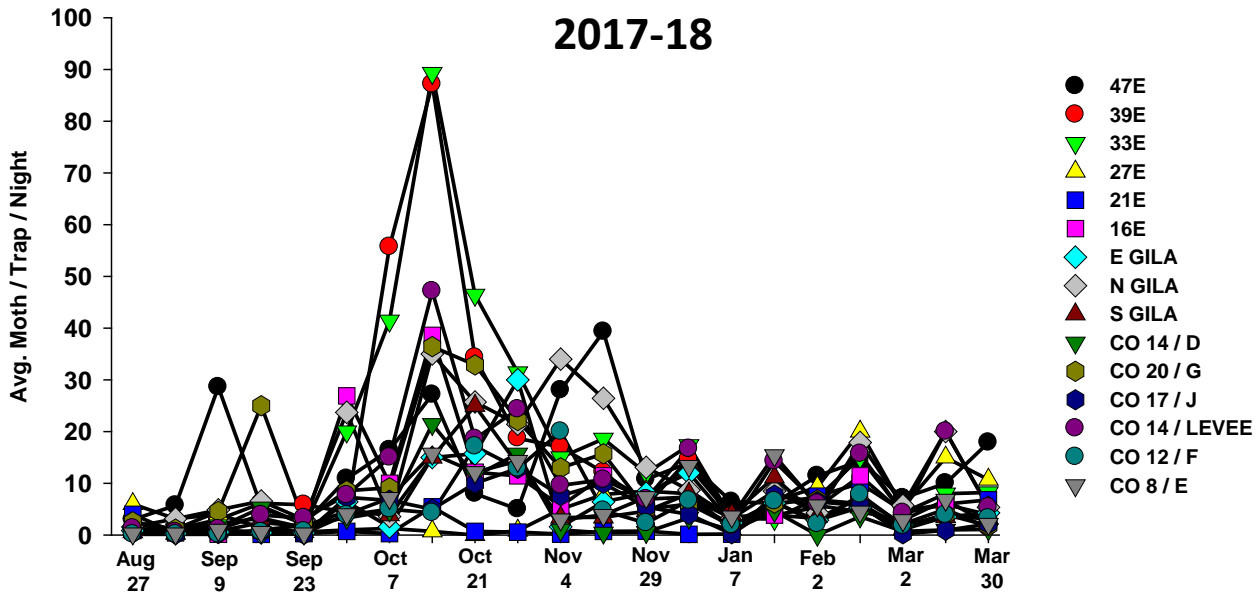


5-Yr Average

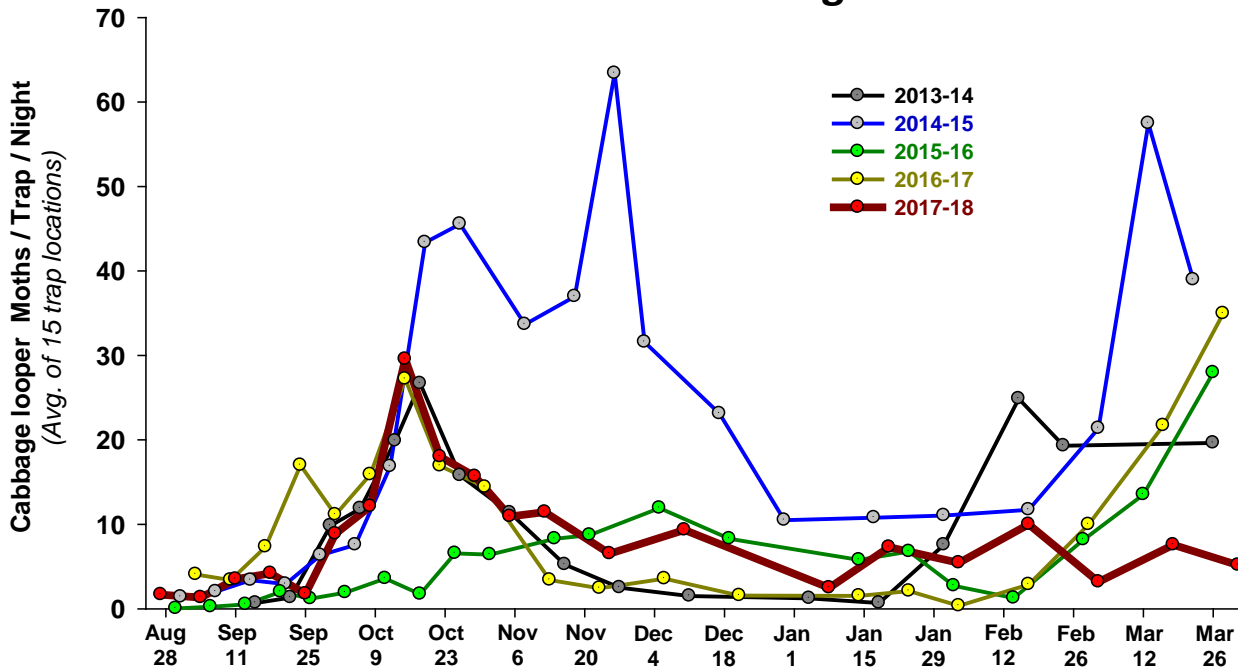


Beet armyworm: Temperatures were lower during the fall 2016 than in the previous 5 years, and are reflected in the reduced moth captures this year. Moth captures were significantly lower this year during the spring as well. Larval infestations as reported by PCAs in fields were very light in 2017, and similar to the trapping trends we observed.

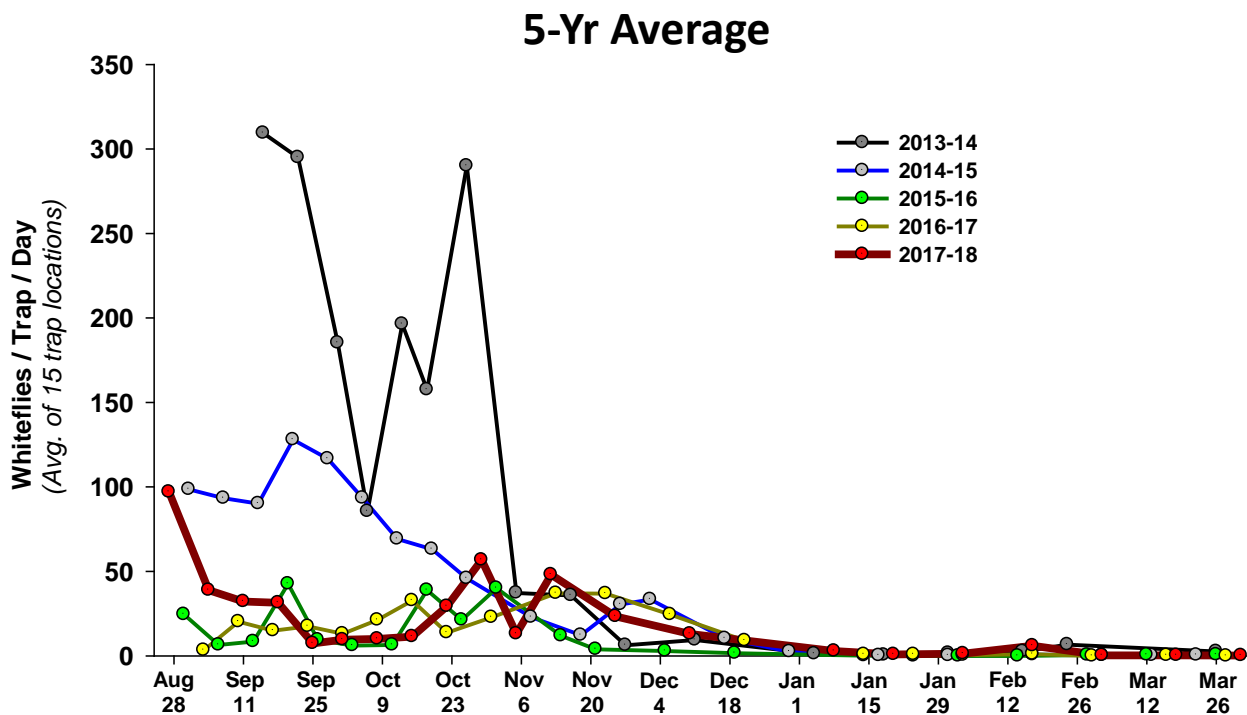
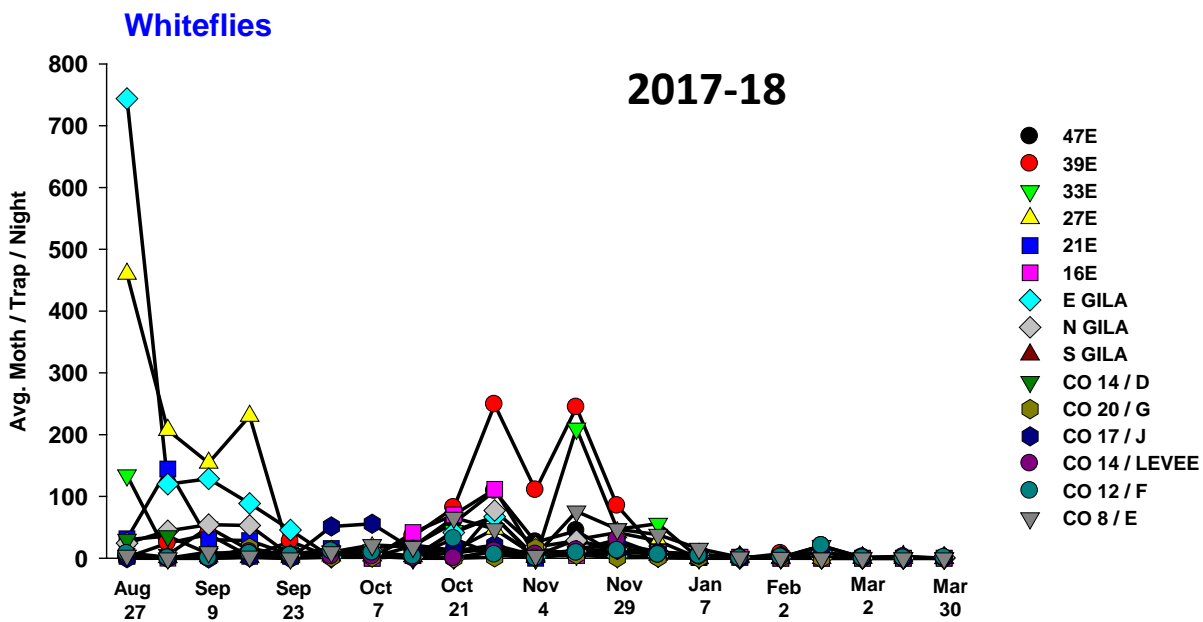
Cabbage Looper



5-Yr Average

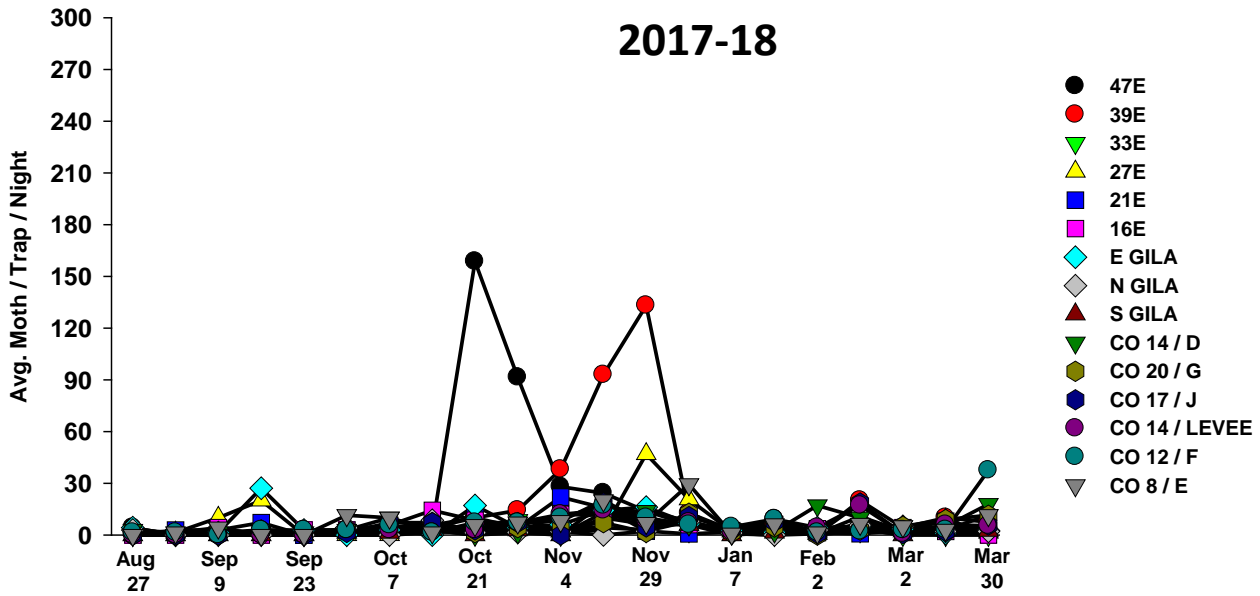


Cabbage looper: Even with lower fall temperatures in 2017, cabbage looper moths were predictably active during the fall compared to the previous season. However, CL moth activity was much reduced in spring lettuce compared to previous years. These trends were consistent cabbage looper larval populations in commercial fields where PCA's reported having to treat for looper like they normally would in the fall and less than normal in the spring.

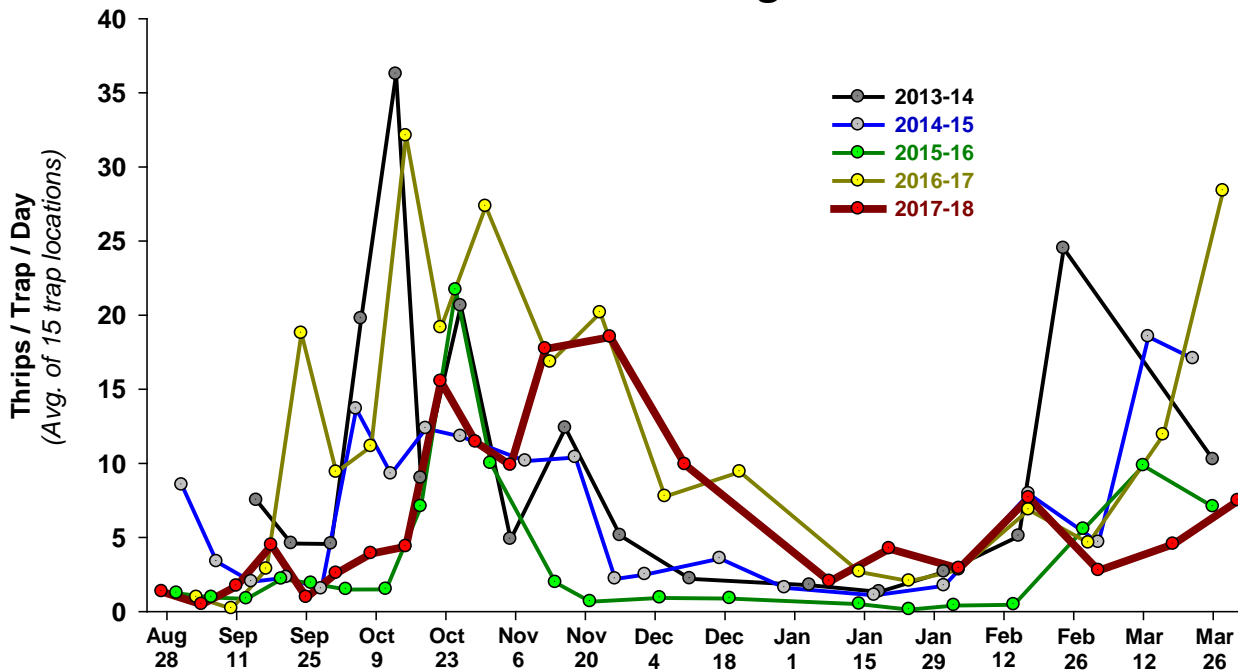


Sweetpotato Whitefly: Whitefly movement is greatest during the fall when adults are migrating out of cotton, alfalfa and melons onto lettuce. In contrast, whiteflies move very little during the spring. In 2017-18, whitefly numbers captured on traps were significantly higher in some trap locations during August and early September, compared to previous years, but were significantly lower in October. 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.

Thrips



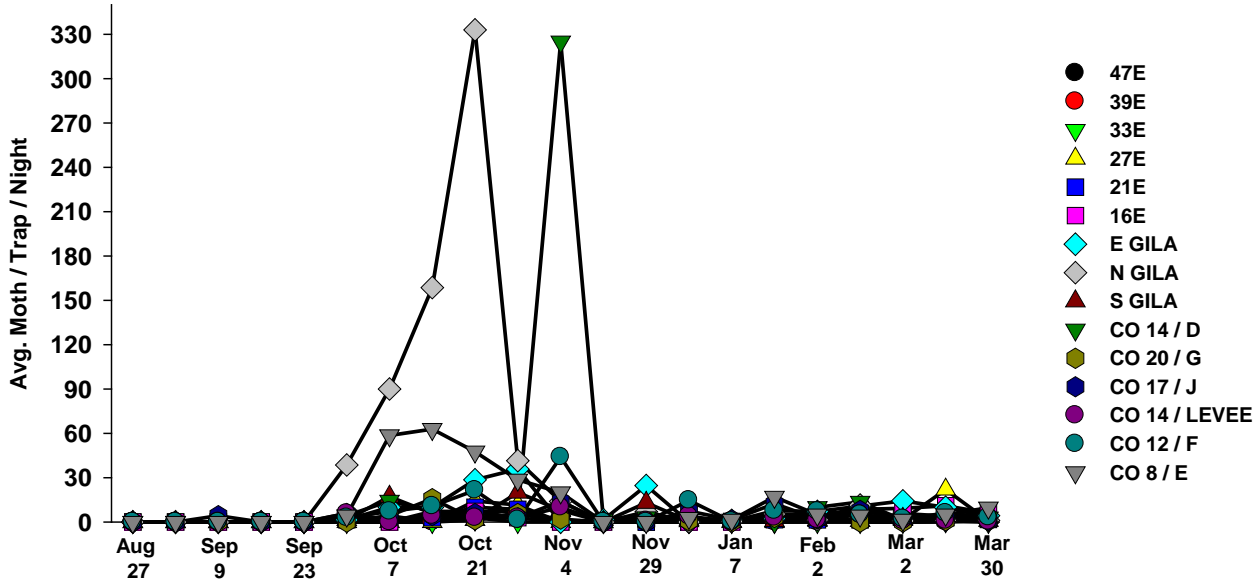
5-Yr Average



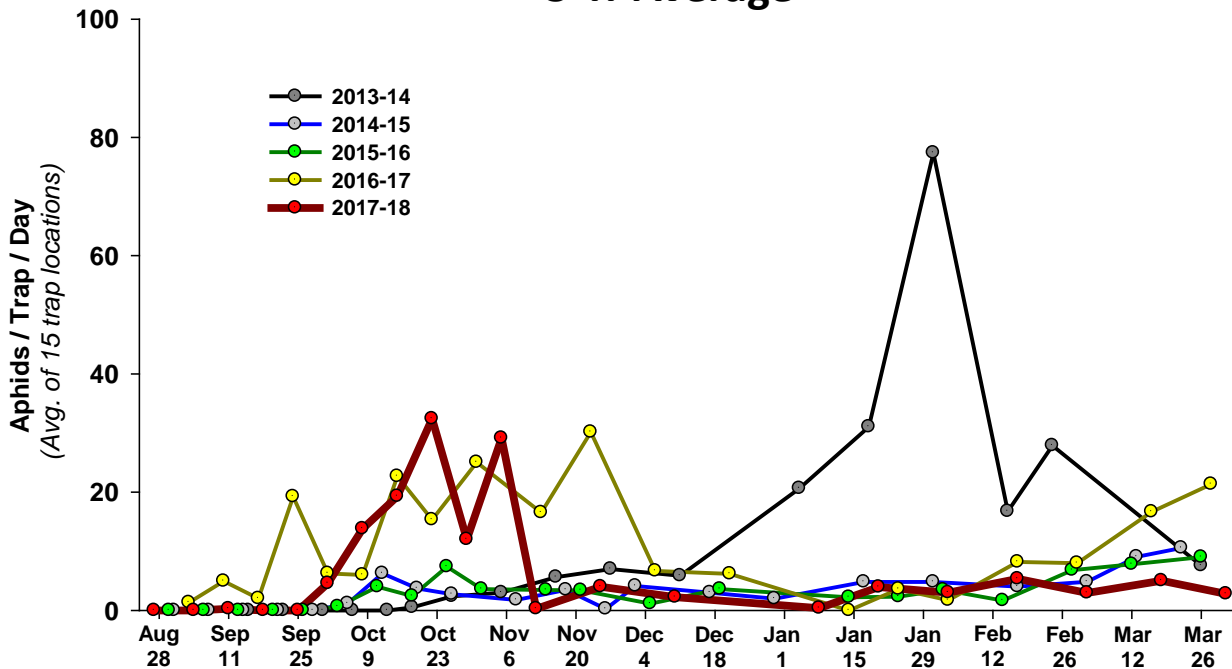
Western Flower Thrips: Trends in thrips movement in 2017-2018 were similar to previous years showing that adult thrips tend to move primarily in October/November (likely coming off of melons, alfalfa and cotton), and then again in Feb-Mar. Adult movement is lowest in Dec when temperatures are lowest. The movement in the spring occurs due to “bioconcentration” which occurs each year as lettuce acreage declines. Each time a lettuce field is harvested and disked, adult thrips populations disperse from these areas into the next available lettuce field.

Aphids

2017-18

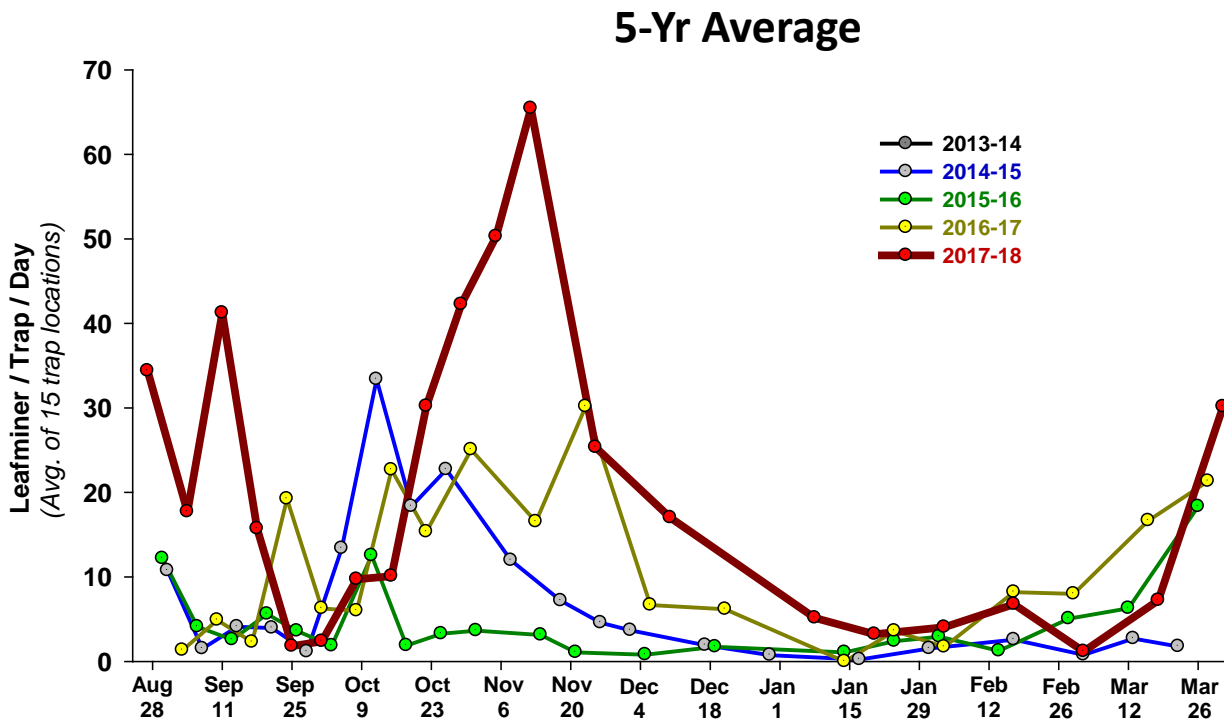
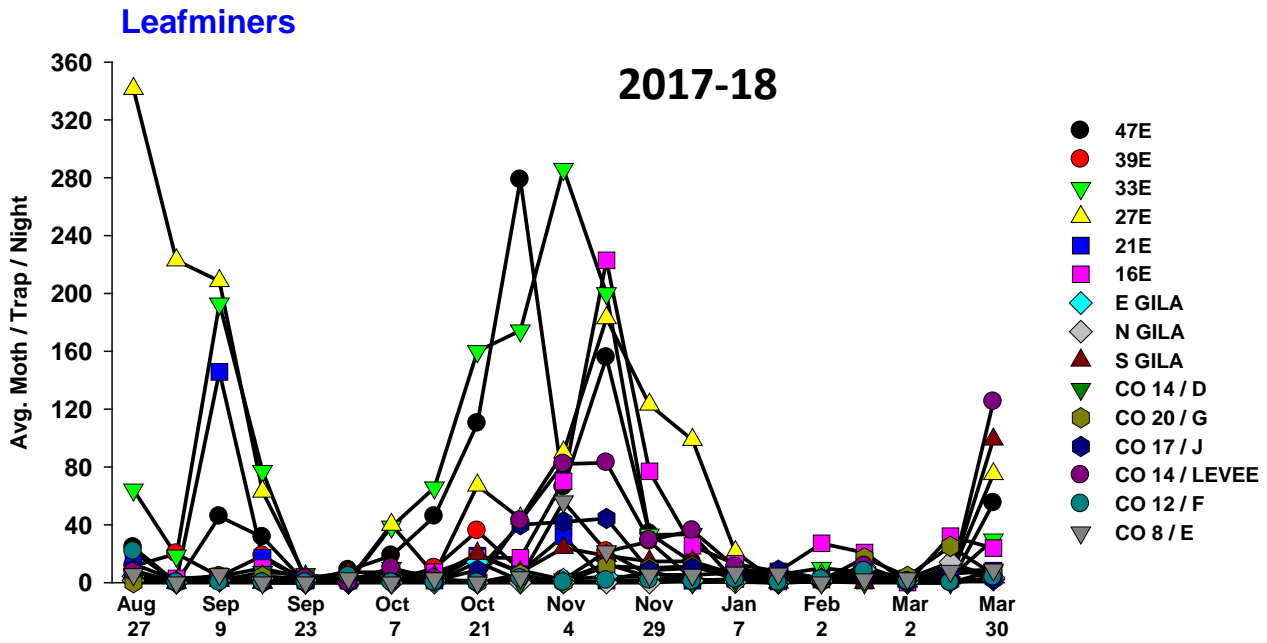


5-Yr Average



Aphids:

Fall movement of aphids was higher in 2017 than in the previous 5 years. As expected, trap counts were generally higher in the north Yuma and Gila Valleys. This occurs as in the fall aphids begin to move into these valleys as the winds begin to blow in from the N-NE. The majority of aphid species captured on these traps in both years were green peach aphids. However, these high trap counts were not consistent with heavy nymph colonization in commercial lettuce and cole crops during Jan-Apr. Spring aphid population in commercial fields 2018 were considered light to moderate.



Liriomyza Leafminers: Leafminer adult activity was considerably greater in 2017 than in previous years, particularly in Dome Valley, Wellton and Roll/Tacna trap locations which were located adjacent to cotton and melons. Warmer temps in the winter likely explains the higher captures in the winter. The majority of adults trapped were *Liriomyza sativae*, although *Liriomyza trifolii*, was observed on traps in some locations, particularly in the fall.