

Arizona Department of Agriculture
AILRC Grants Program – Final Report for 2017
Project 17-03

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

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

Location of Research: Yuma Valley Agricultural Center

Objective: *To continue for a fourth 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.*

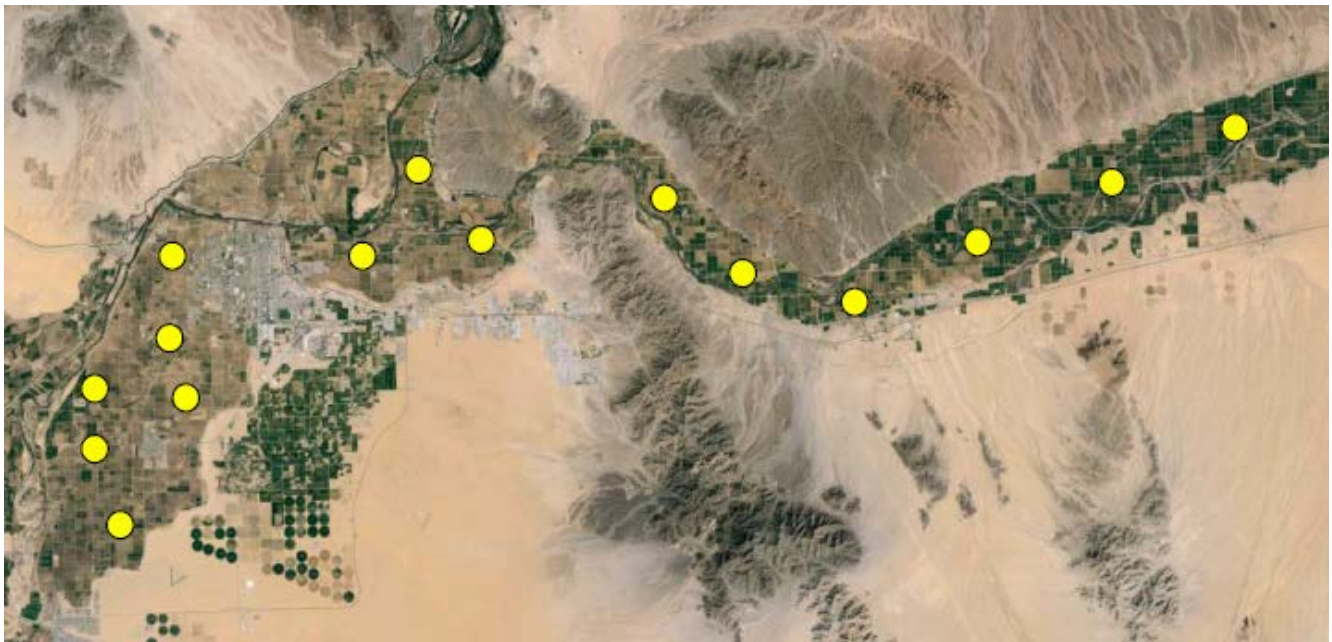
In the 2016-17 growing season, the *Area-wide Insect Trapping Network* was continued for a fourth year, with numbers of trap and locations similar to the previous year. Information was gathered from a network of traps that were placed and monitored weekly from mid-August through March. A total of fifteen 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 2015-2016 season.

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

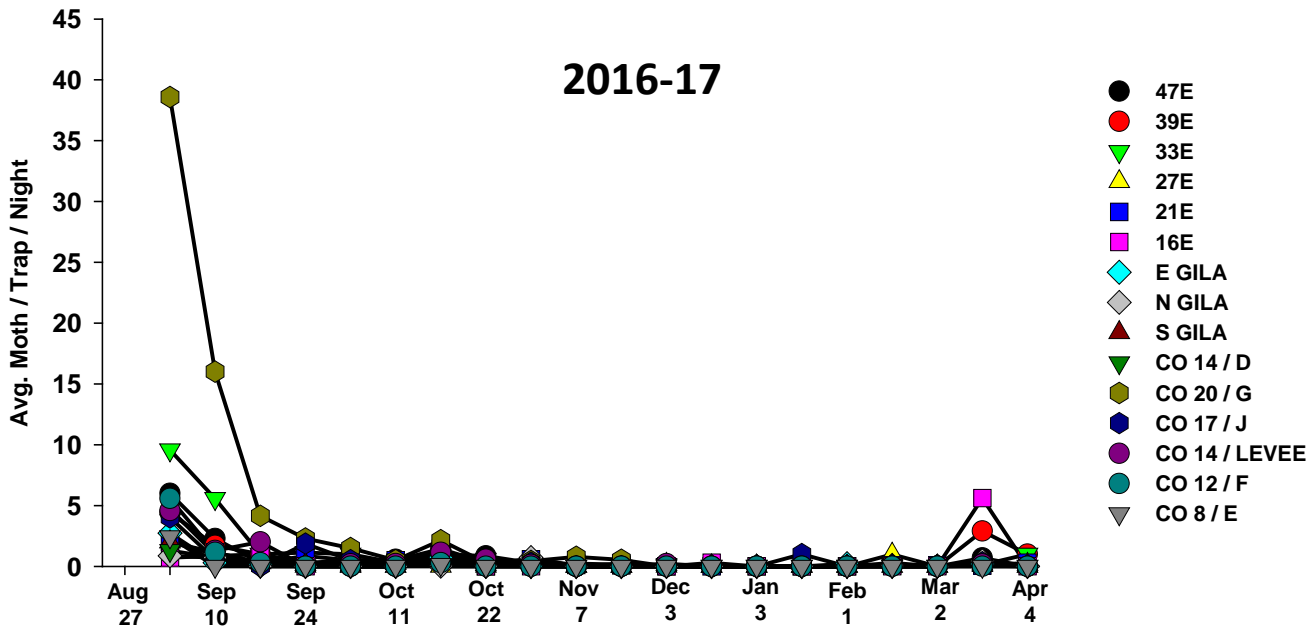


Area-wide Insect Trapping Network

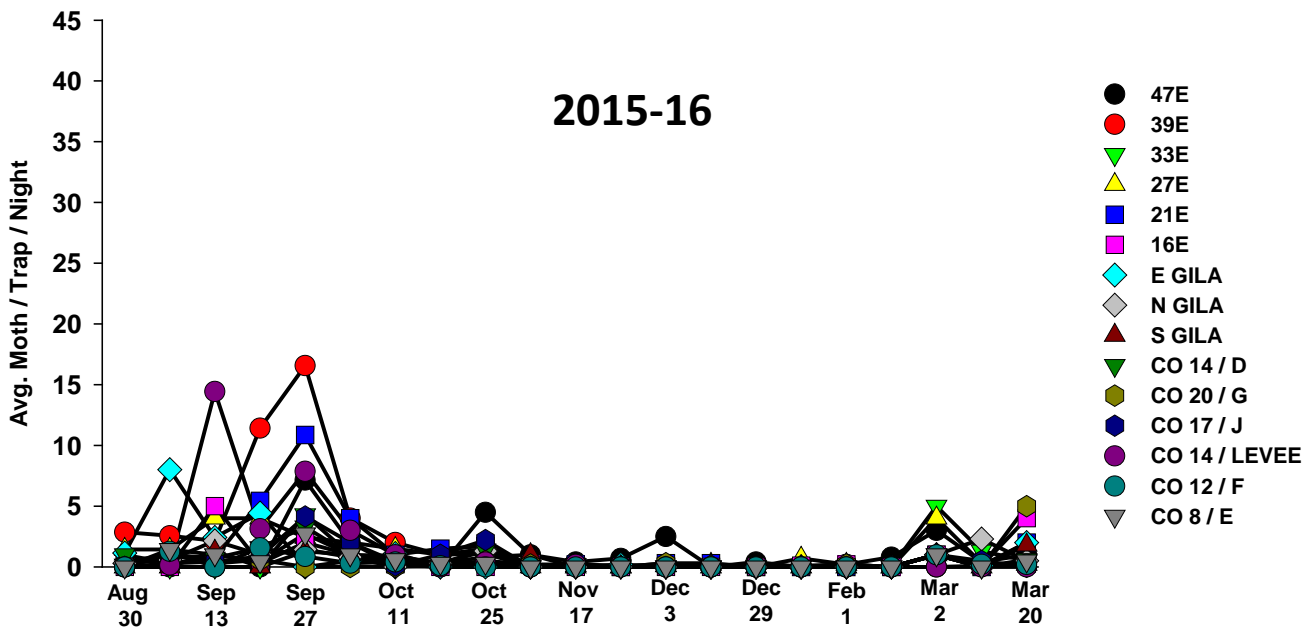
North Gila Valley Location



Corn Earworm

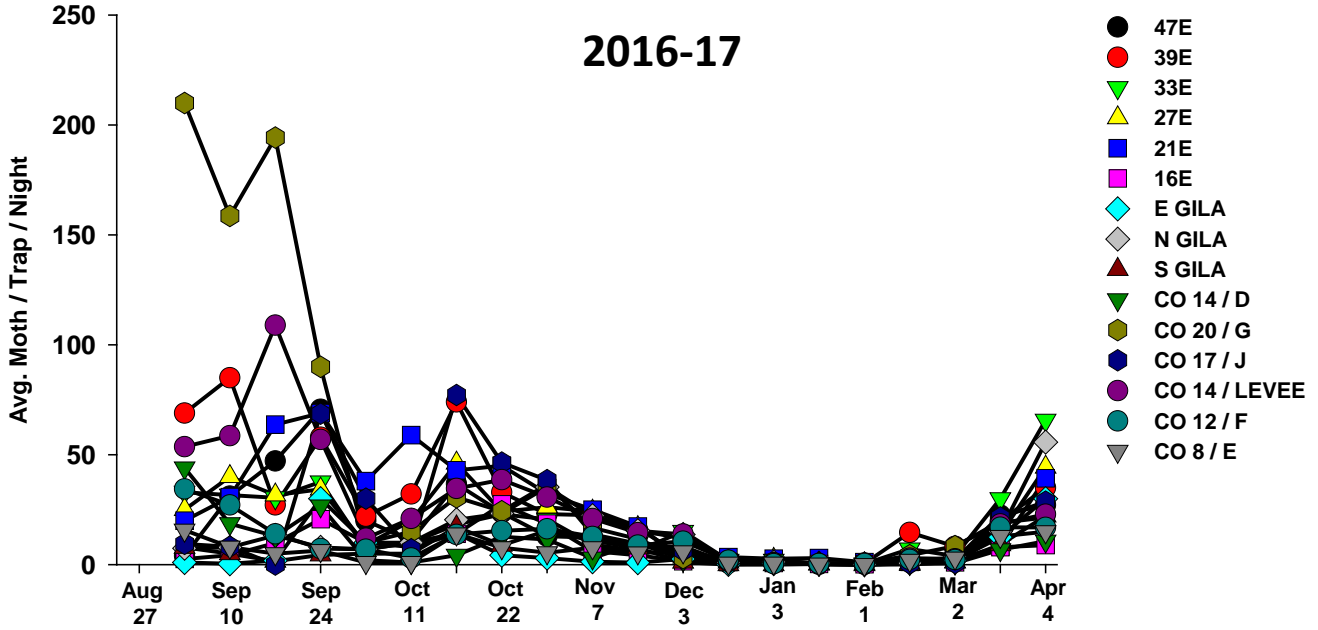


Corn Earworm

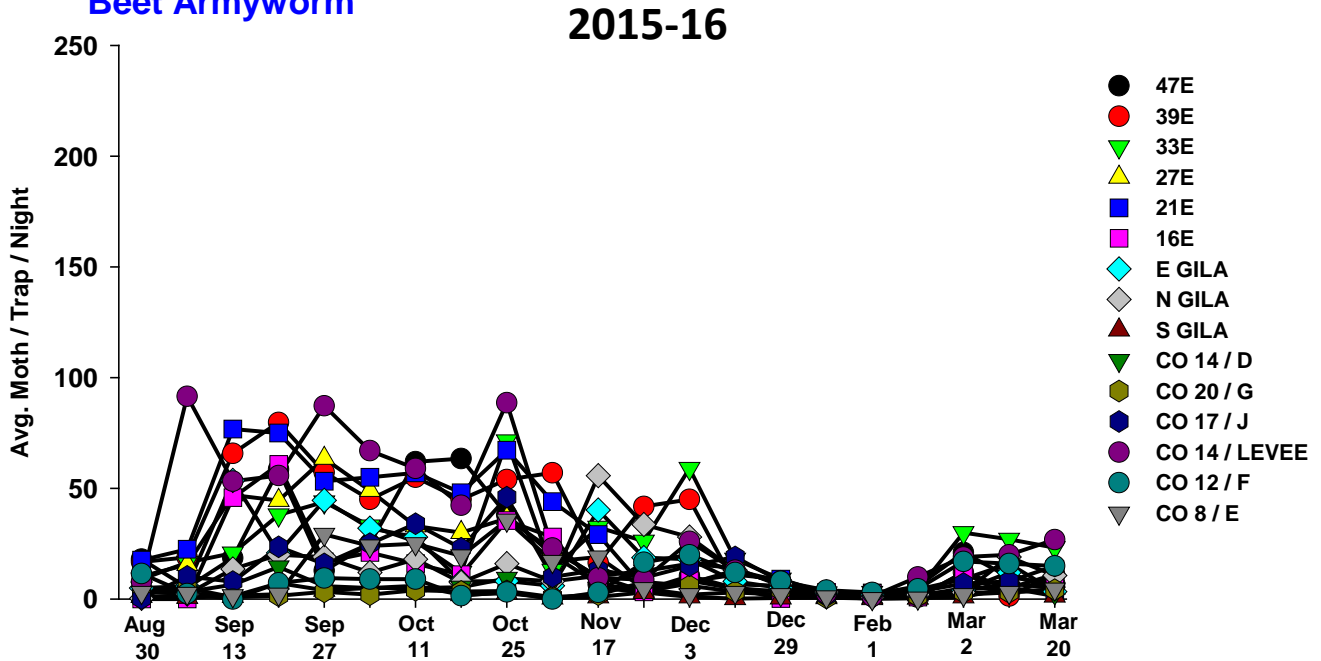


Corn Earworm: Moth activity in 2016-17 was slightly than in 2014-15, particularly during Aug-Sep. In previous years, trap captures were higher in October which is a key period during the produce season when lettuce is at highest risk from corn earworm: The first harvested fields in November. However, last season, the moth population peaked early in September and stayed low during October and November. Ther were few reports of CEW larvae in commercial fields in the fall of 2016 or spring of 2017, similar to 2015-16.

Beet Armyworm

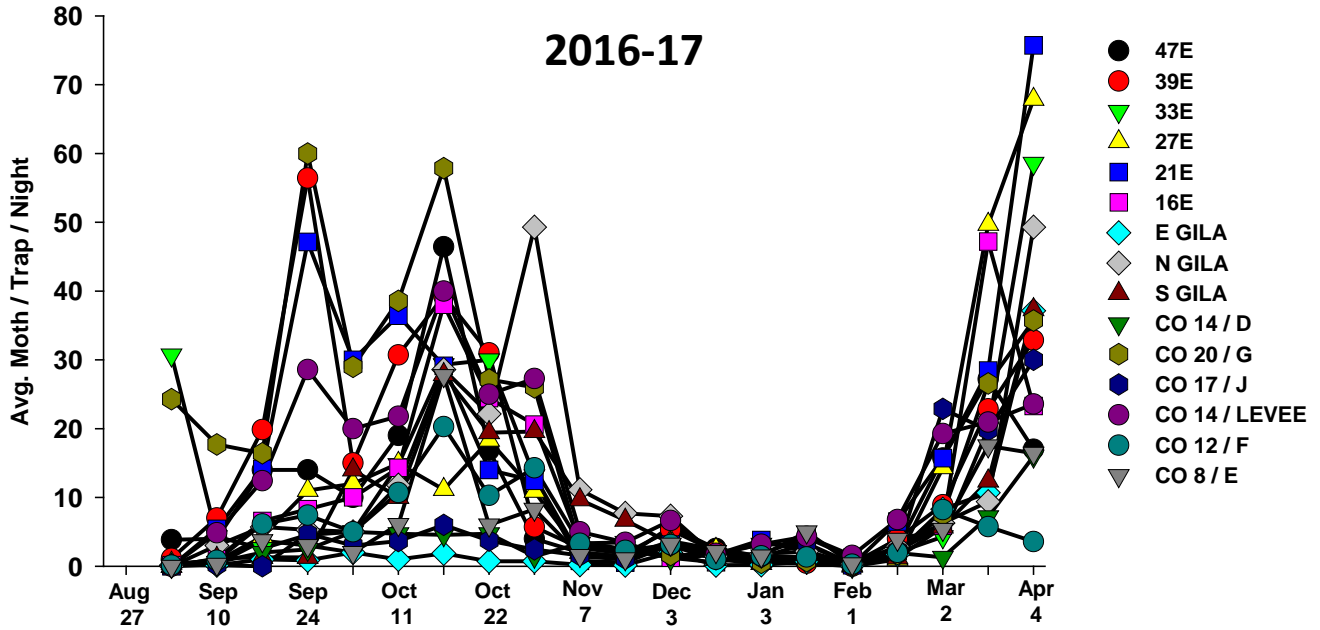


Beet Armyworm

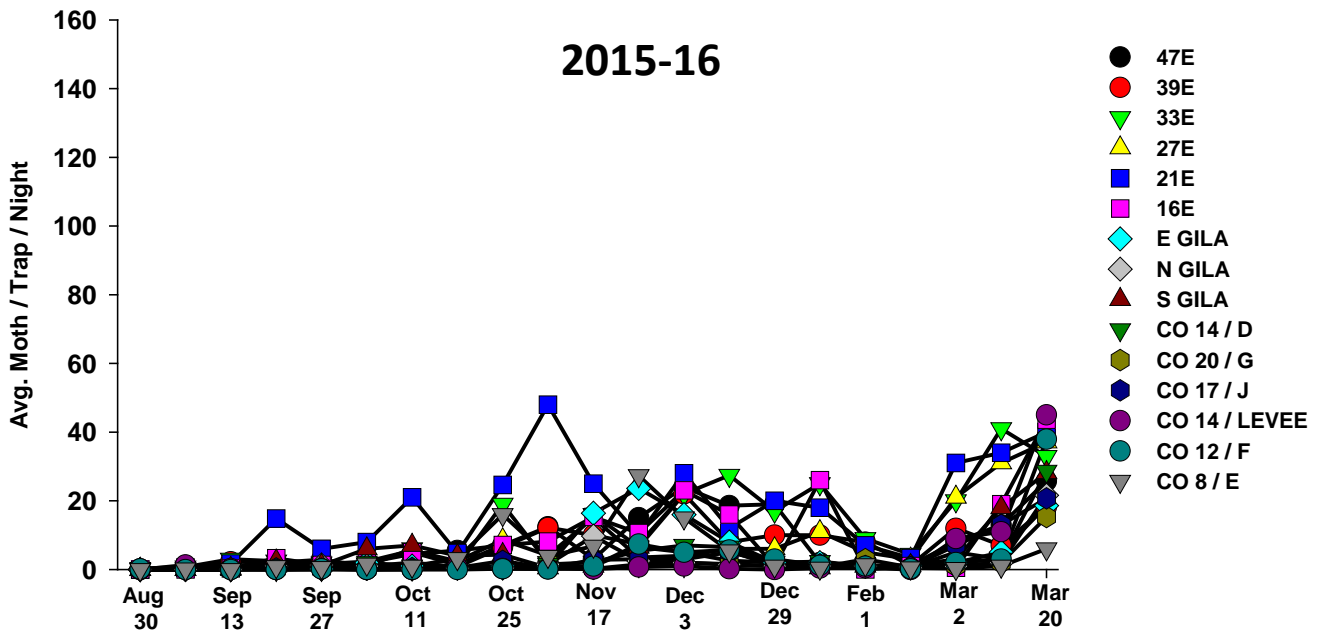


Beet armyworm: Temperatures were above average during the fall 2016 and are reflected in the higher moth captures this year compared to 2015-16. Moth captures were significantly lower this year during the spring, with the exception of a few locations in early April. Larval infestations as reported by PCAs in fields were similar to the trapping trends we observed.

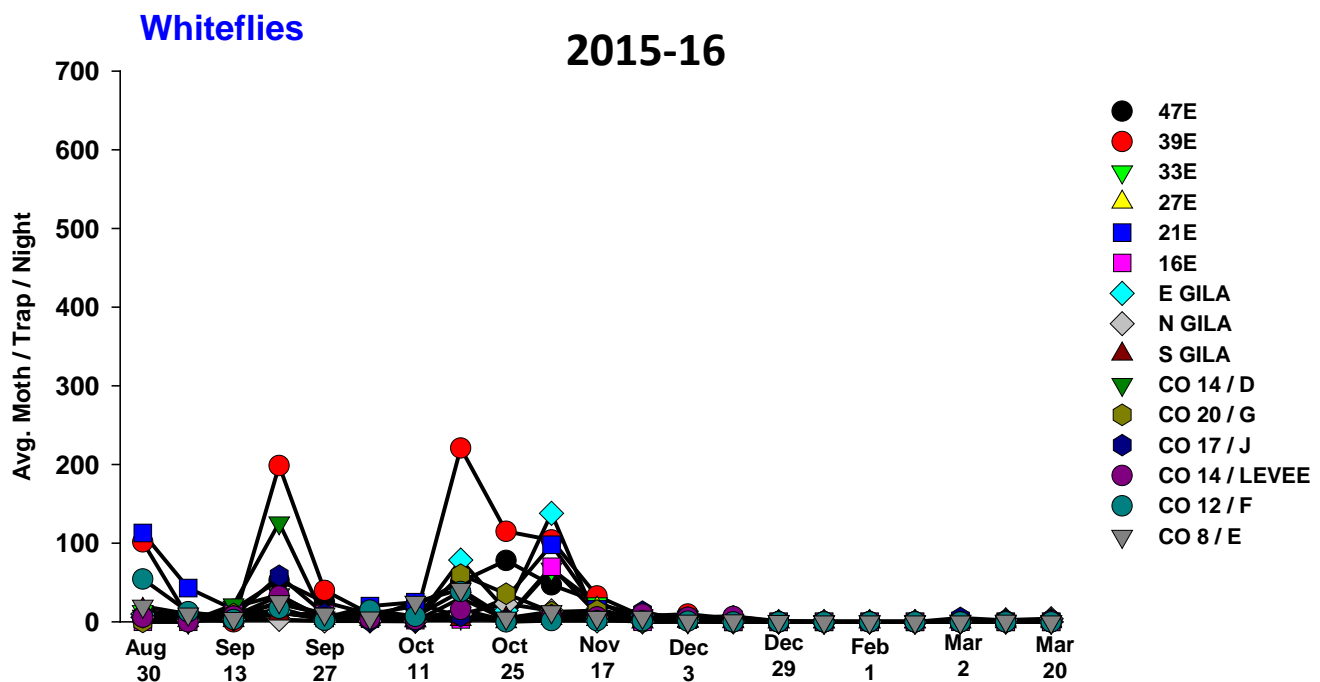
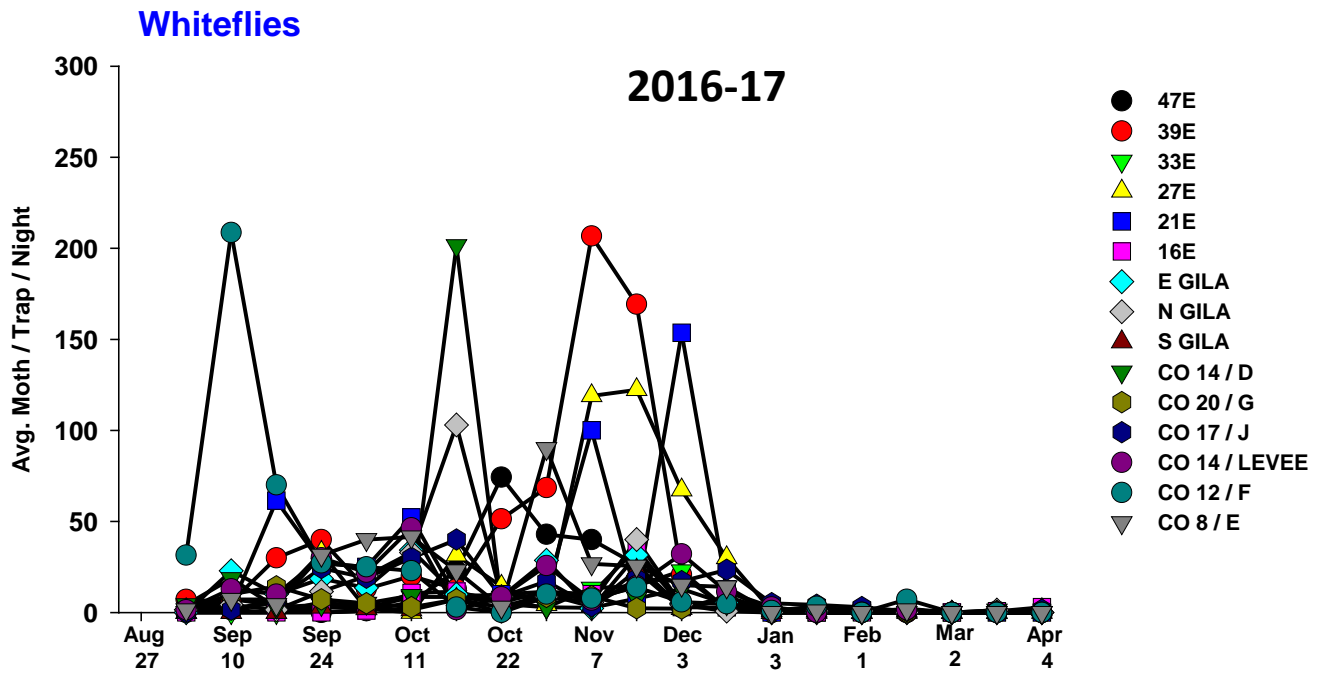
Cabbage Looper



Cabbage Looper

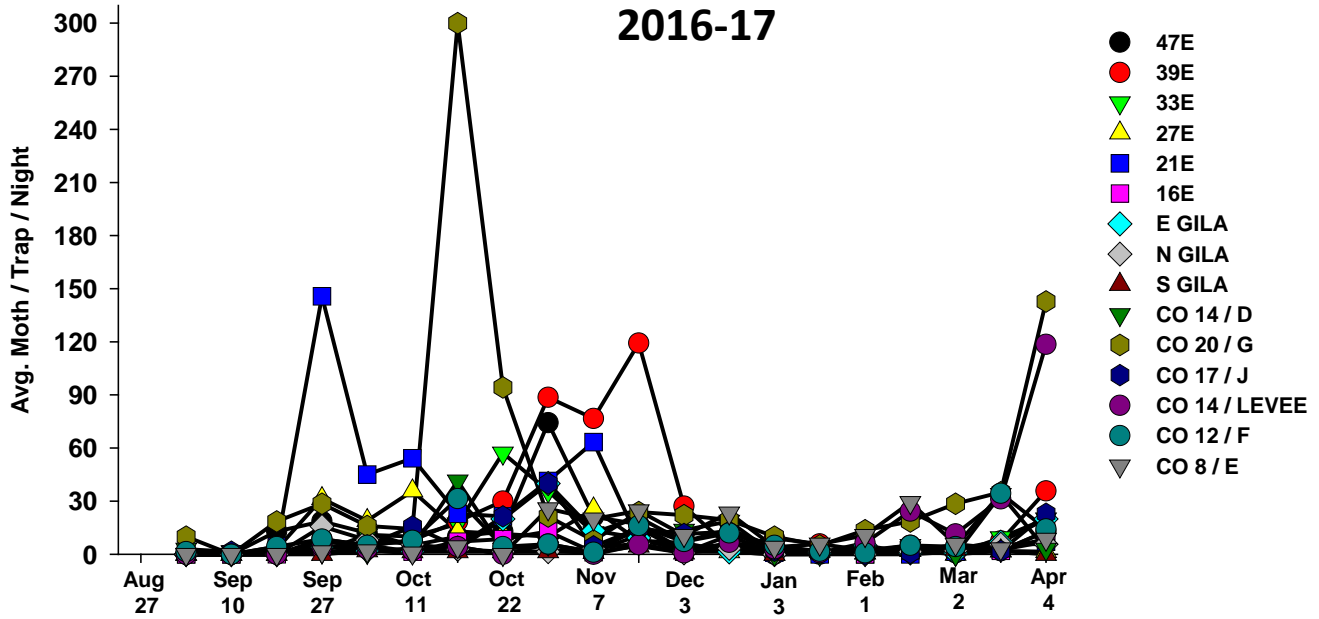


Cabbage looper: Due to the warmer weather during the 2016-17 season, cabbage looper moths were considerably more active during the fall and spring as compared to the previous season. These trends were also observed for cabbage looper larval populations in commercial fields where PCA's reported having to treat for looper more than normal in the fall and spring.

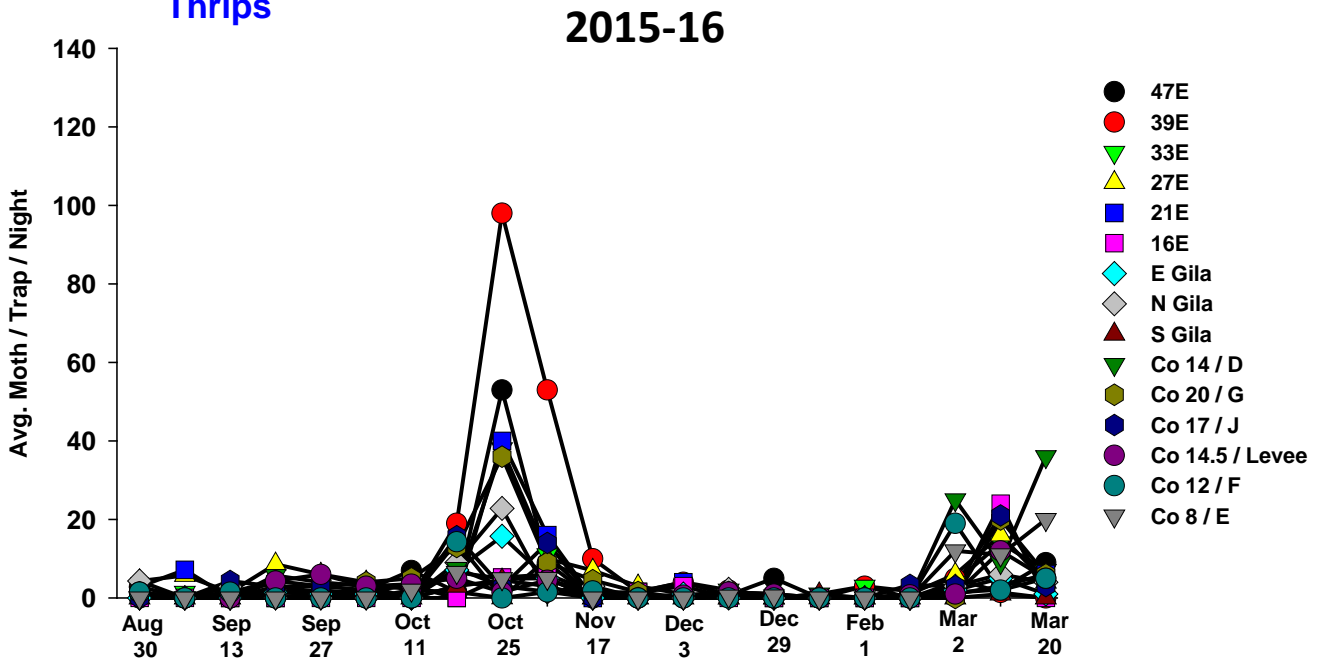


Sweet potato whitefly: These graphs clearly demonstrate that whitefly movement is greatest during the fall when adults are migrating out of cotton, alfalfa and melons onto lettuce. In contrast, whiteflies move very little during the spring. In 2016-17, whitefly numbers captured on traps were significantly higher in some trap locations compared to the previous year. Traps with the peak whitefly counts were near cotton fields or melons fields that had been harvested.

Thrips



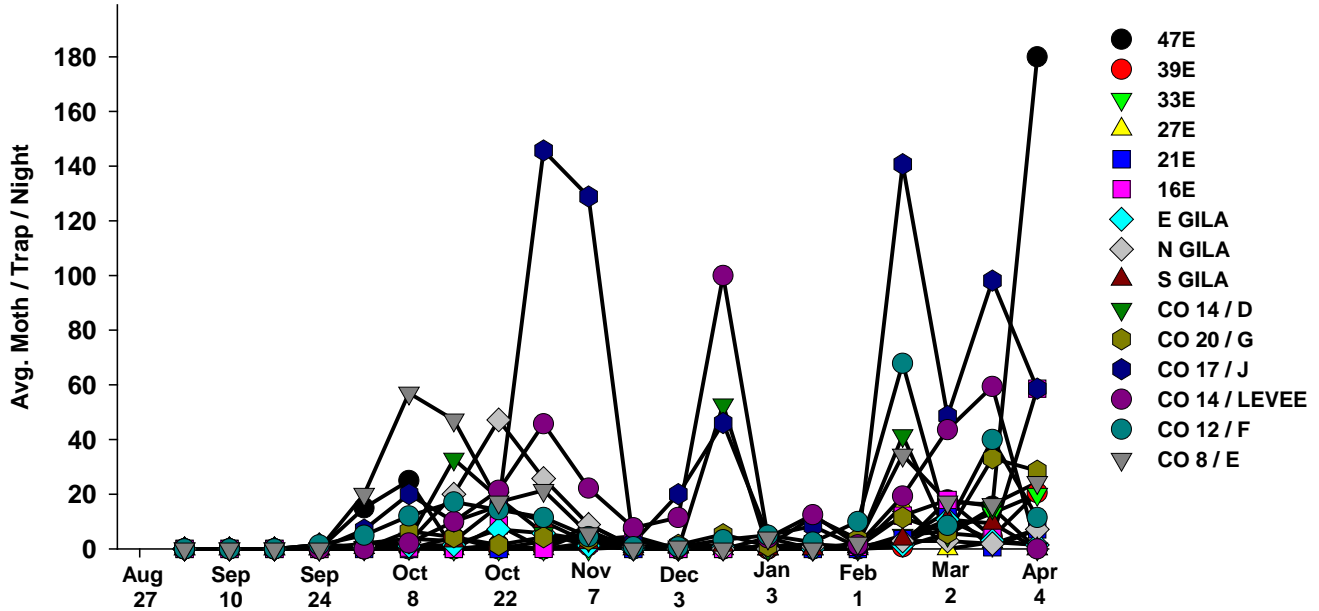
Thrips



Western Flower Thrips: Trends in thrips counts were similar in both 2016-17 and 2015-16 showing that adult thrips tend to move primarily in October/November (likely coming off of melons, alfalfa and cotton), and then again in Feb-April. Abundance is lowest in Dec-Jan 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.

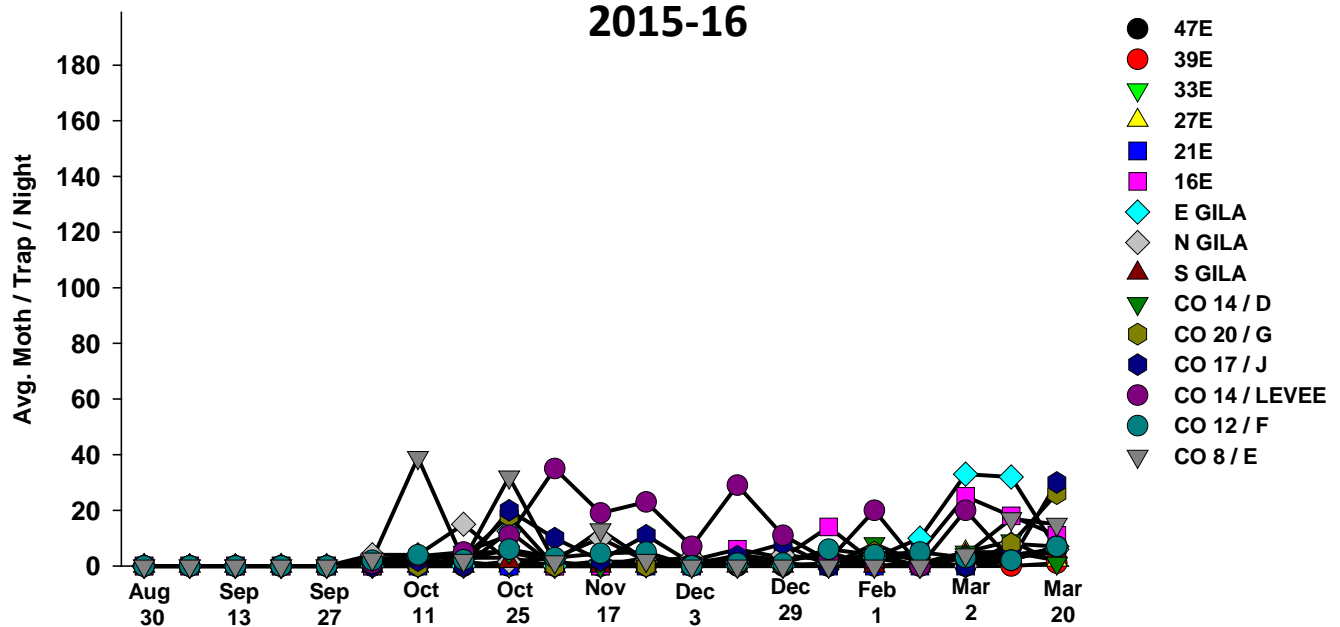
Aphids

2016-17



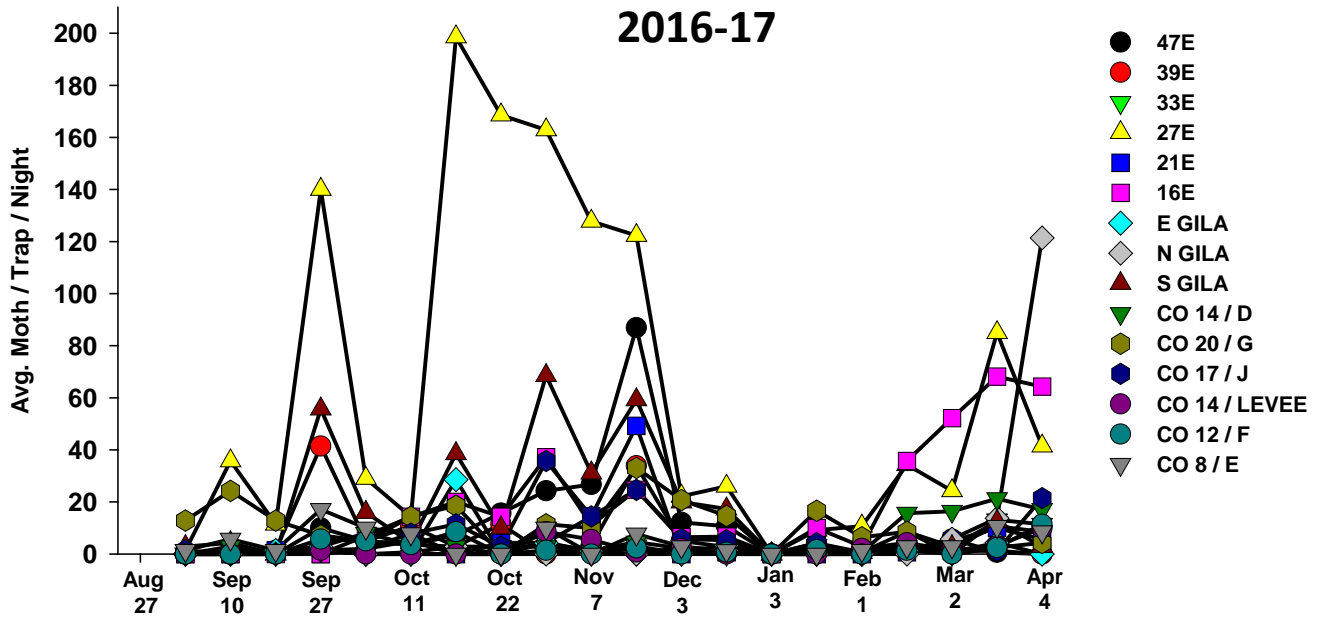
Aphids

2015-16

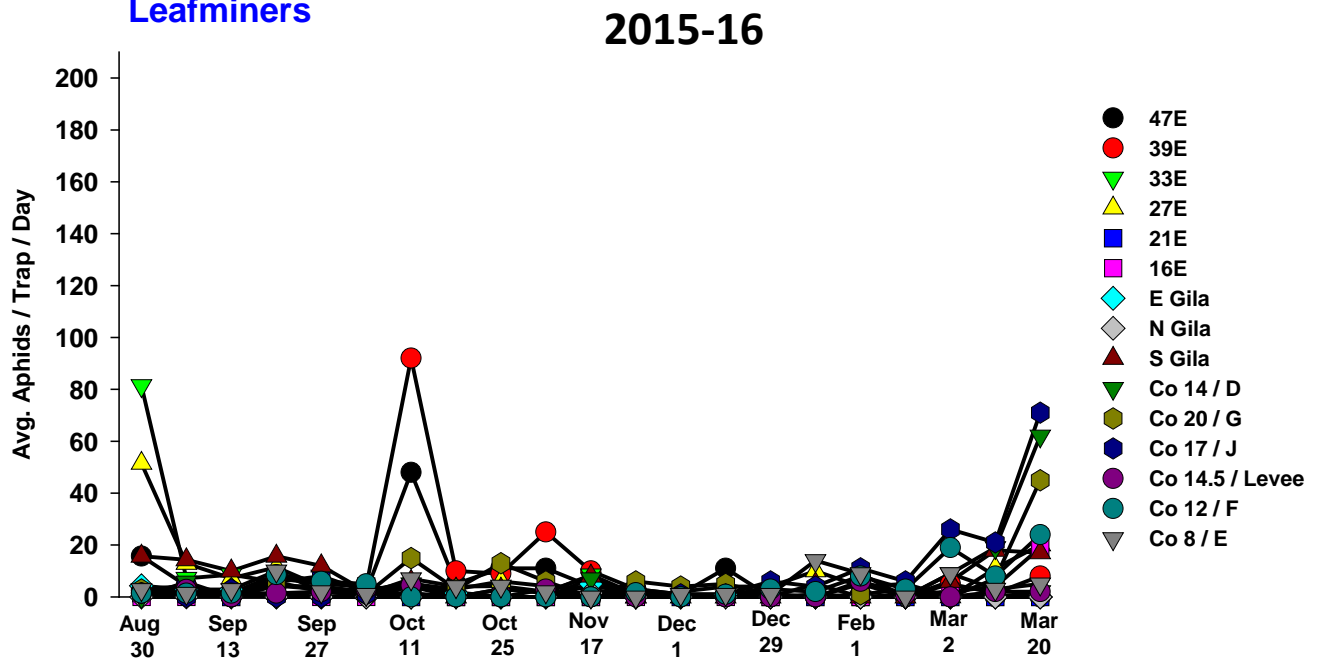


Aphids: Aphid movement was relatively higher season long in 2016-17. As expected trap counts were generally higher in the Yuma and Gila Valleys. This occurs as in the fall aphids begin to move into these valleys as the winds begin to blow in from the N-NE. The majority of aphid species captured on these traps in both years were green peach aphids. These high trap counts were consistent with heavy nymph colonization in commercial lettuce and cole crops during Jan-Apr. One of the heaviest aphid infestation growers experienced in many years.

Leafminers



Leafminers



***Liriomyza* Leafminers:** Leafminers adult activity was considerably greater in the fall of 2016, particularly in one trap location in Wellton which was located adjacent to cotton. Cooler temps in the winter, associated with the areawide usage of Radiant, likely explains the low captures in the winter. Not sure why numbers were heavier in the spring compared to the previous year. The majority of adults trapped were *Liriomyza sativae*, although *Liriomyza trifolii*, was observed on traps in some locations, particularly in the fall.