

Arizona Department of Agriculture
AILRC Grants Program – Final Report for 2016
Project 16-04

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 third 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.*

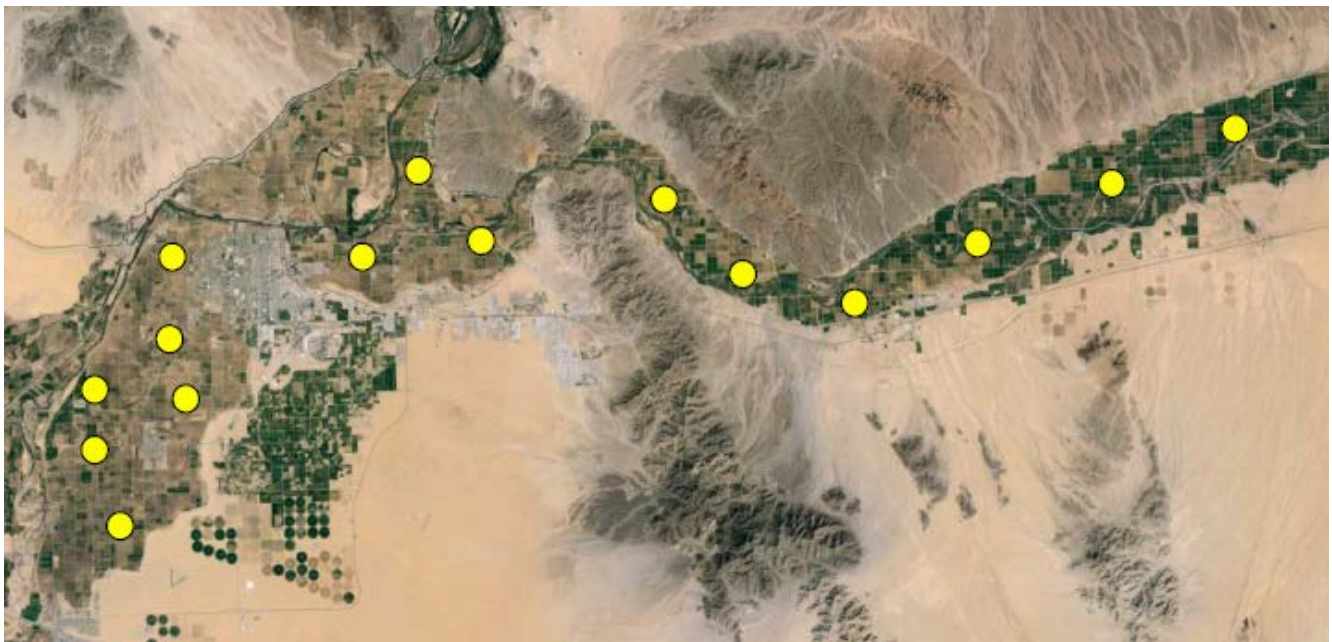
In the 2015-2016 growing season, the *Area-wide Insect Trapping Network* was continued for a third year, with numbers of trap and locations similar to the previous year. Information was gathered from a network of traps that were placed and monitored weekly from mid-August through March. A total of fifteen trap locations were situated in the Yuma Valley (6), Gila Valley (3) and Dome Valley (2), Wellton (2) and Tacna/Roll (2) areas. Traps were located near or adjacent to the AZMET 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 and tobacco budworm, as well as beet armyworm and cabbage looper. In addition, yellow sticky traps were used to monitor 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, tobacco budworm, 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 2014-2015 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



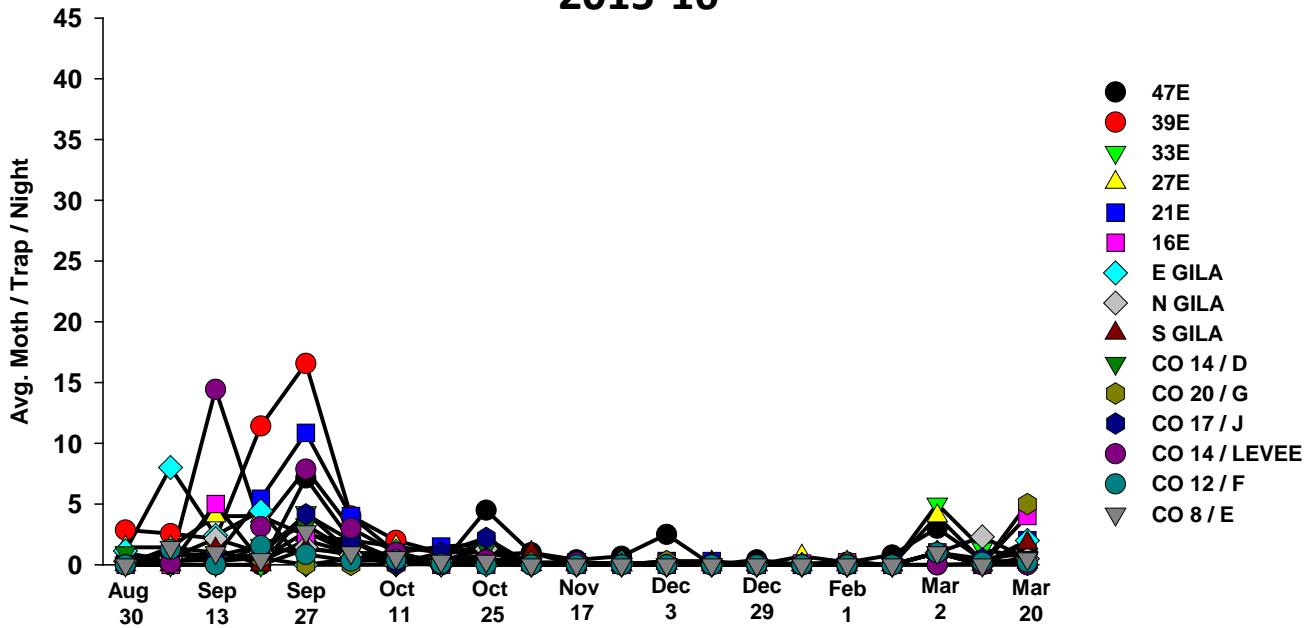
Area-wide Insect Trapping Network

North Gila Valley Location



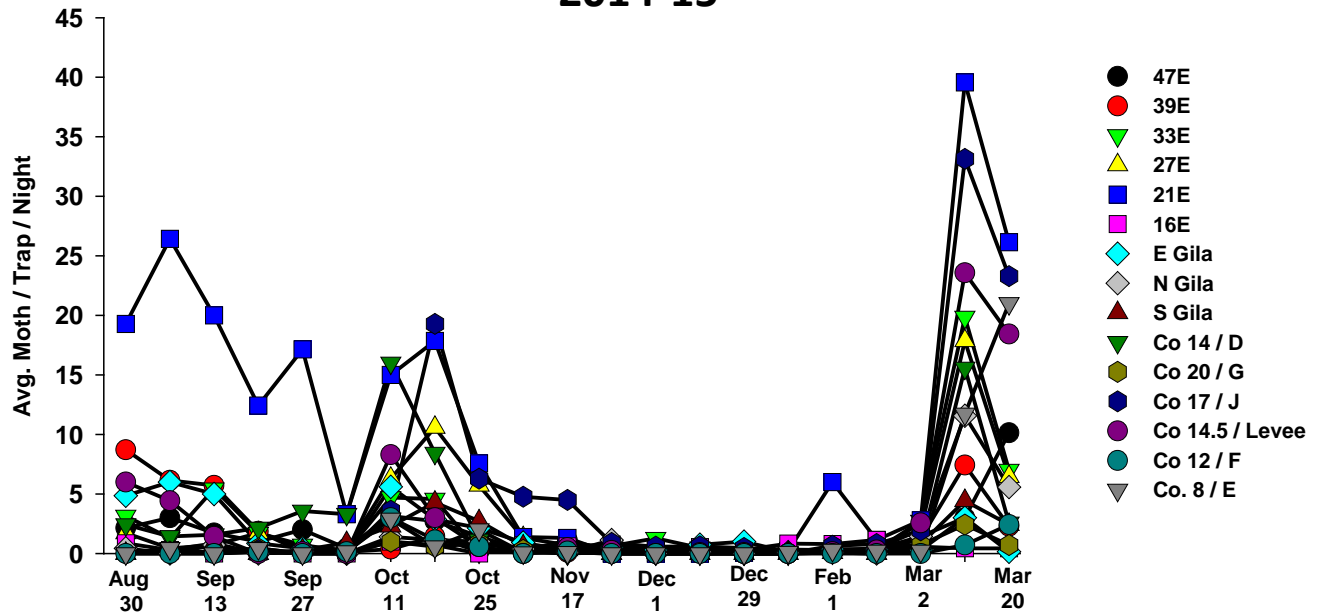
Corn Earworm

2015-16



Corn Earworm

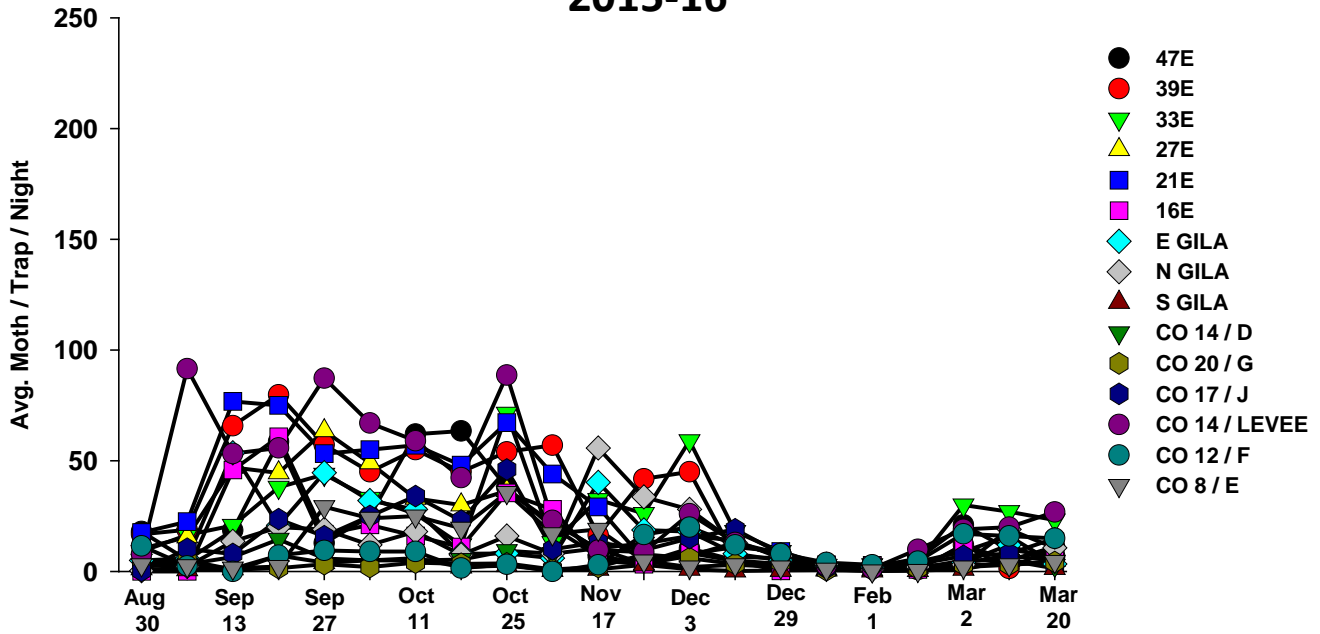
2014-15



Corn Earworm: Moth activity in 2015-16 was lighter than in 2014-15, particularly during the Oct-Nov and more so in Mar. The trends from these traps captures further illustrate the key periods during the produce season when lettuce is at highest risk from corn earworm: The first harvested fields in November and the last fields in March-April. Because of cooler temperatures during Feb-March 2016, moth activity was significantly suppressed in some locations. Populations of CEW larvae were also much lighter in 2016.

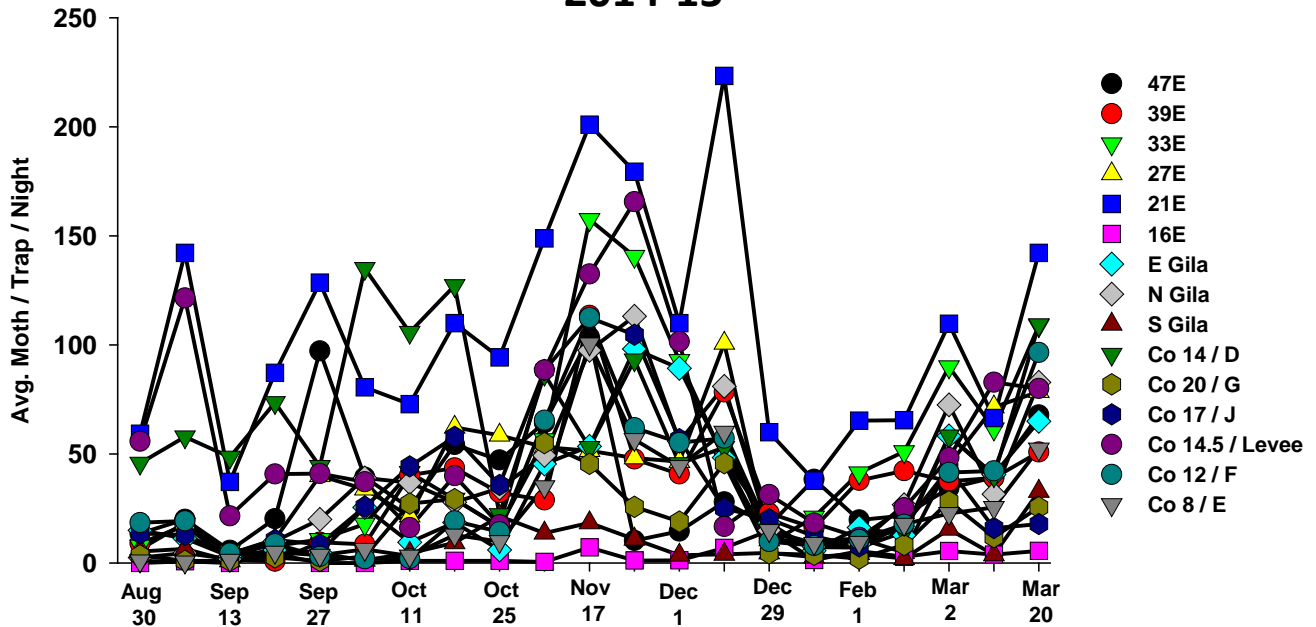
Beet Armyworm

2015-16



Beet armyworm

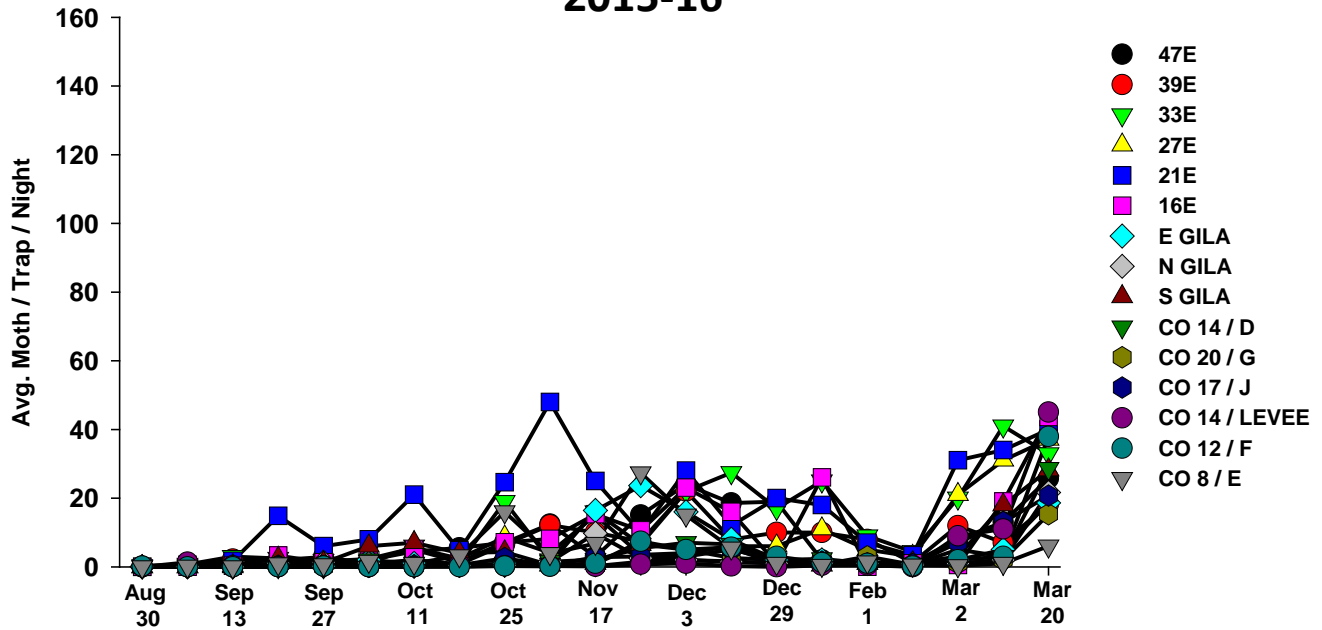
2014-15



Beet armyworm: Fall and warm temperatures were about average during the fall 2015-16 season and are reflected in the lighter moth captures this years compared to 2014-15. Moth captures were significantly lower this year during the spring. Larval infestations as reported by PCAs in fields were similar to the trapping trends we observed.

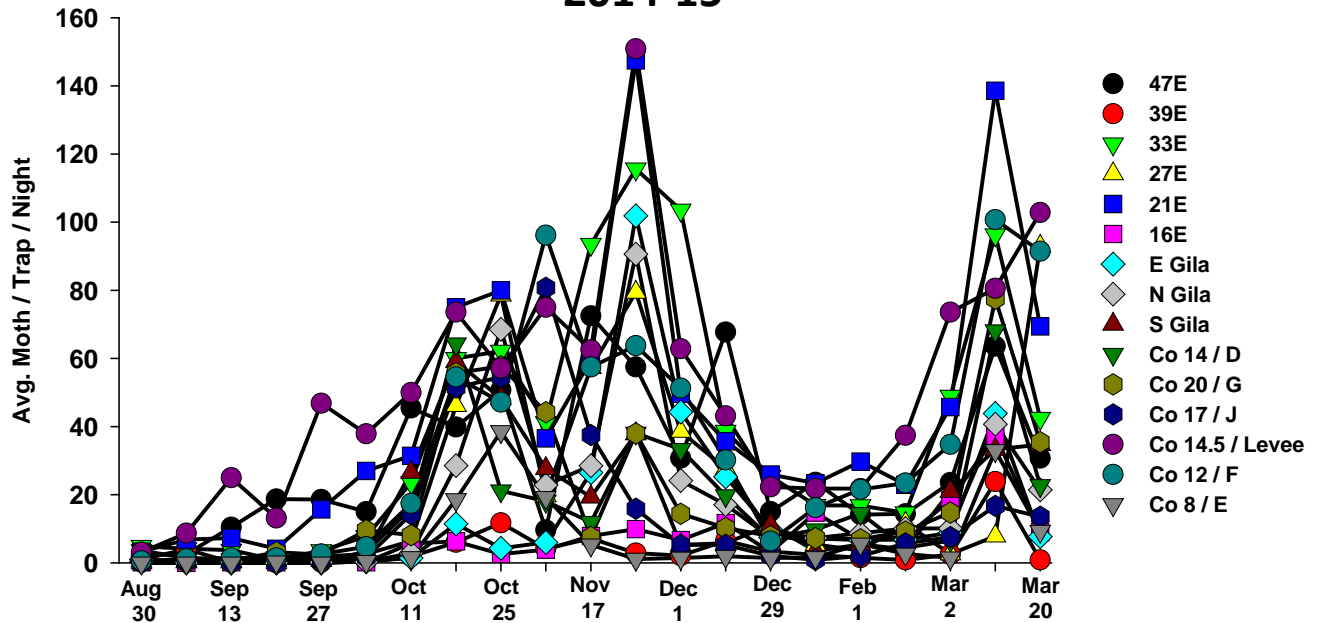
Cabbage Looper

2015-16

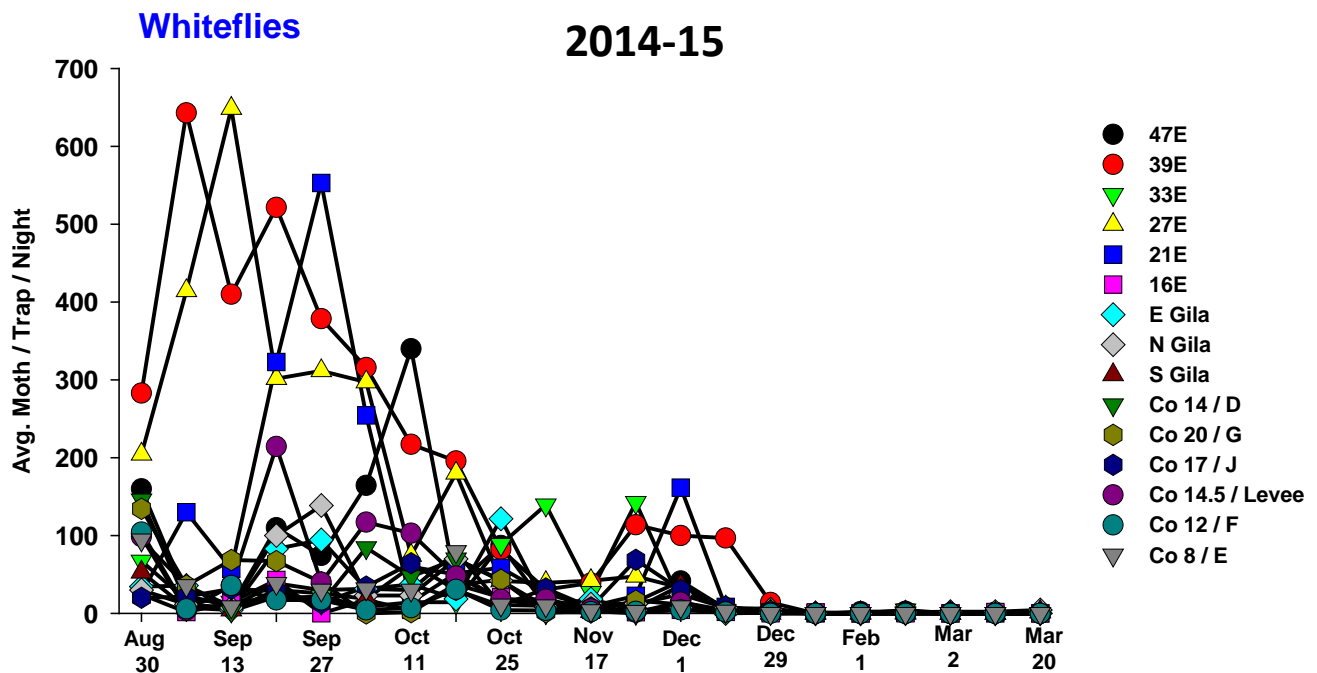
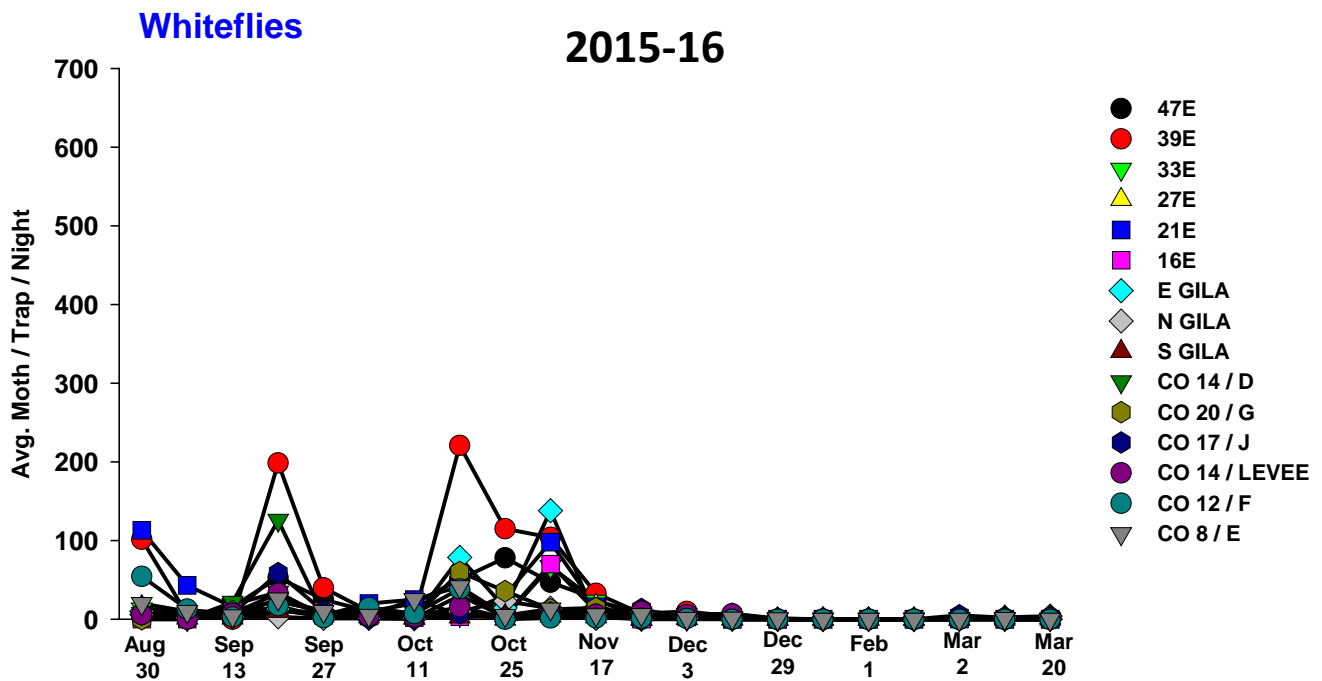


Cabbage looper

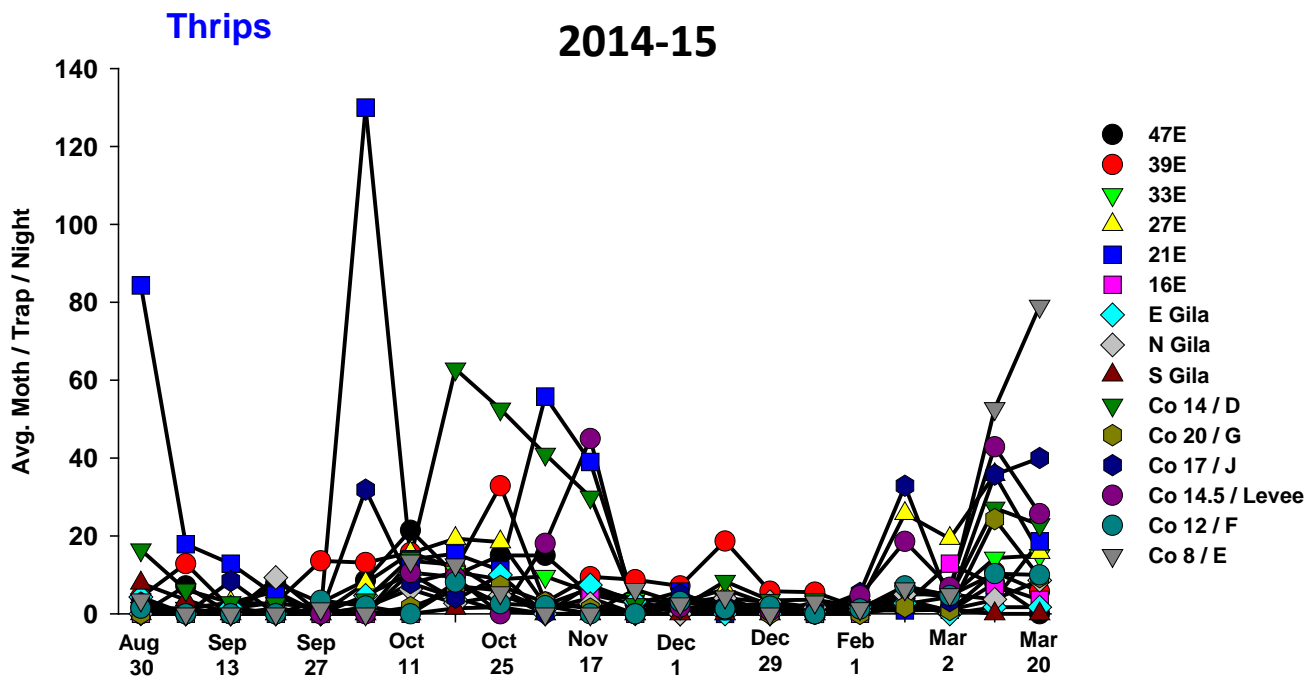
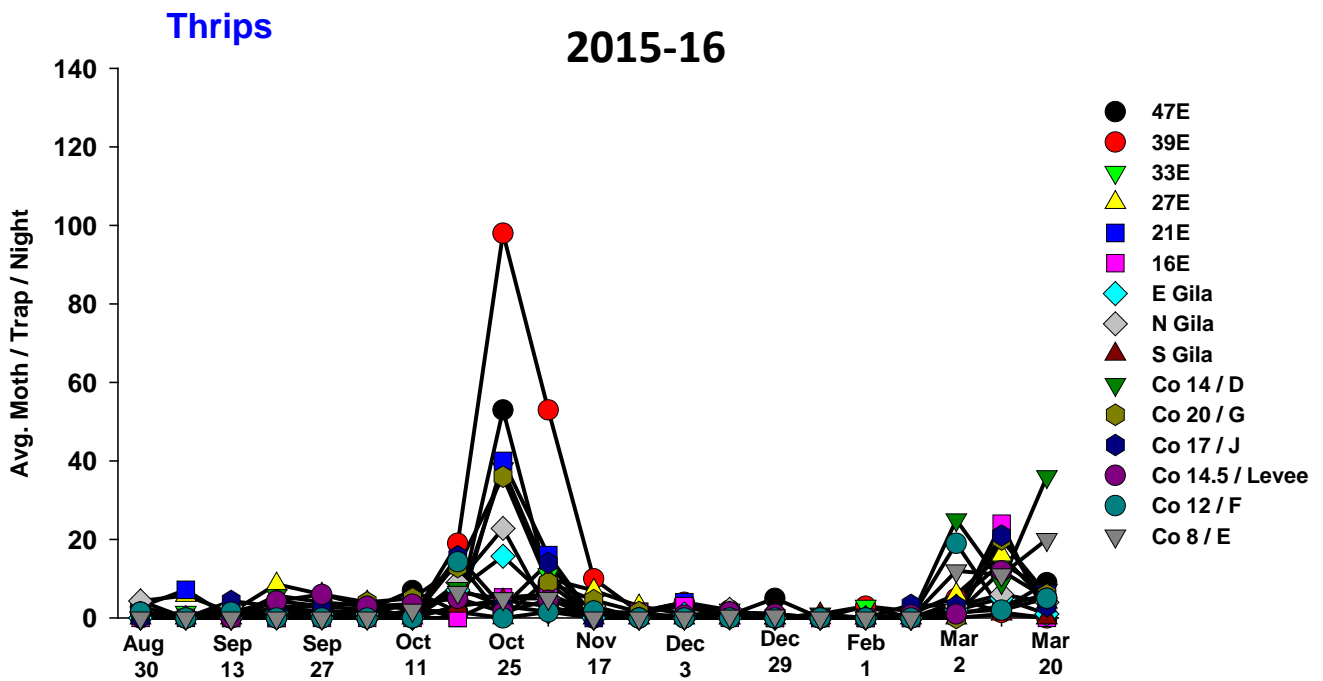
2014-15



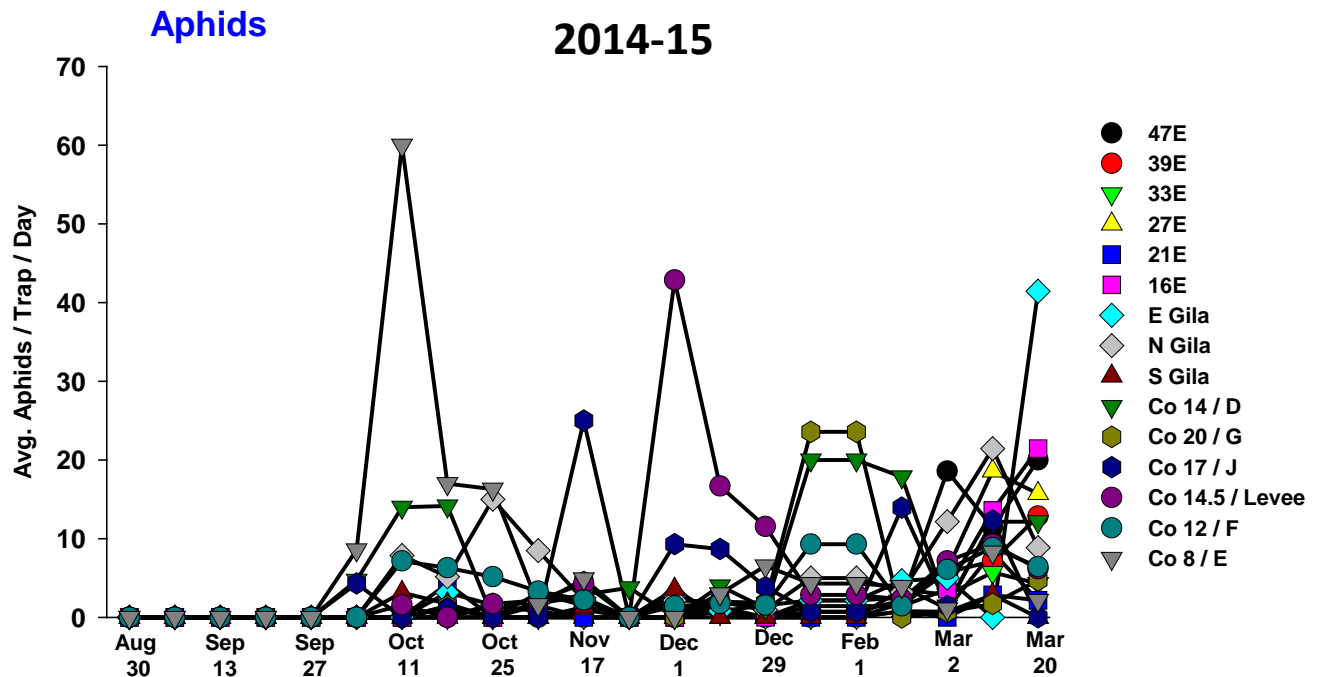
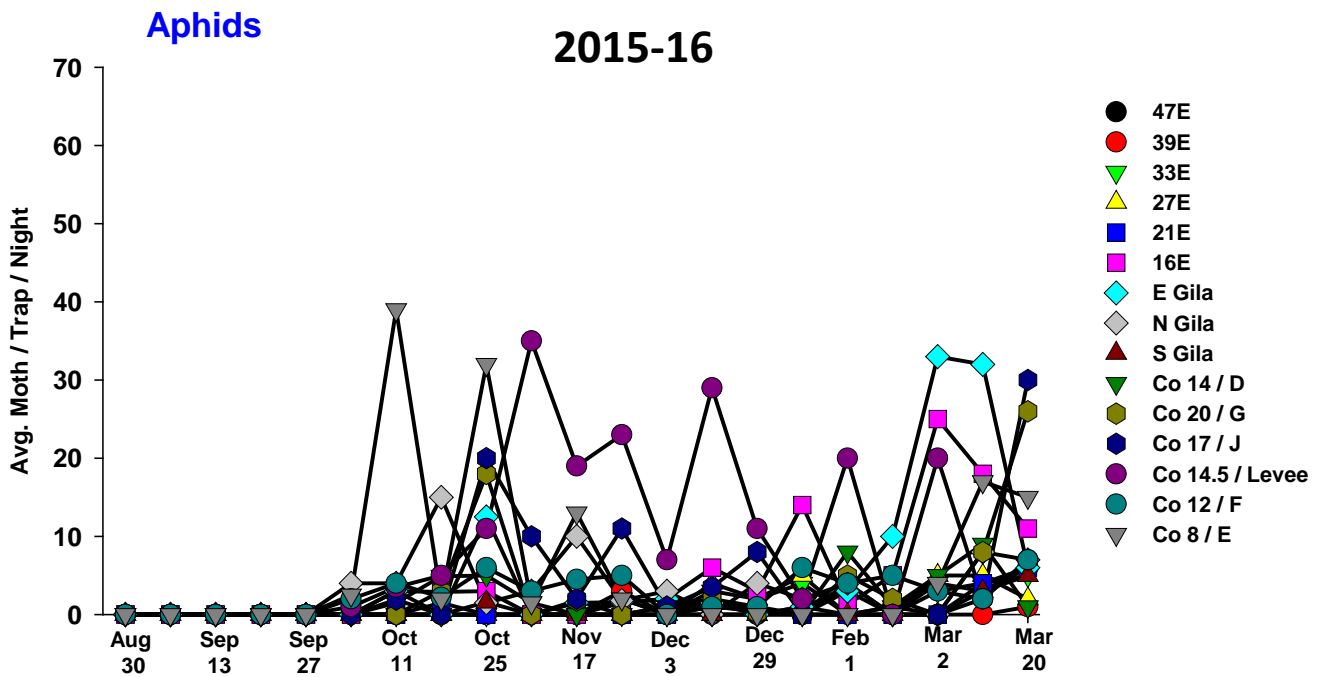
Cabbage looper: Similar, due to the cooler weather during the 2015-16 season, cabbage looper moths were considerably less active during November and December, and again in March, as compared to the previous season. Similarly, larvae in fields were observed at treatable levels season long as reported by PCAs.



Sweetpotato 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 2015-16, whitefly numbers captured on traps were unusually low compared to the previous year, and is thought to be associated with the reduction in cotton acreage area-wide.



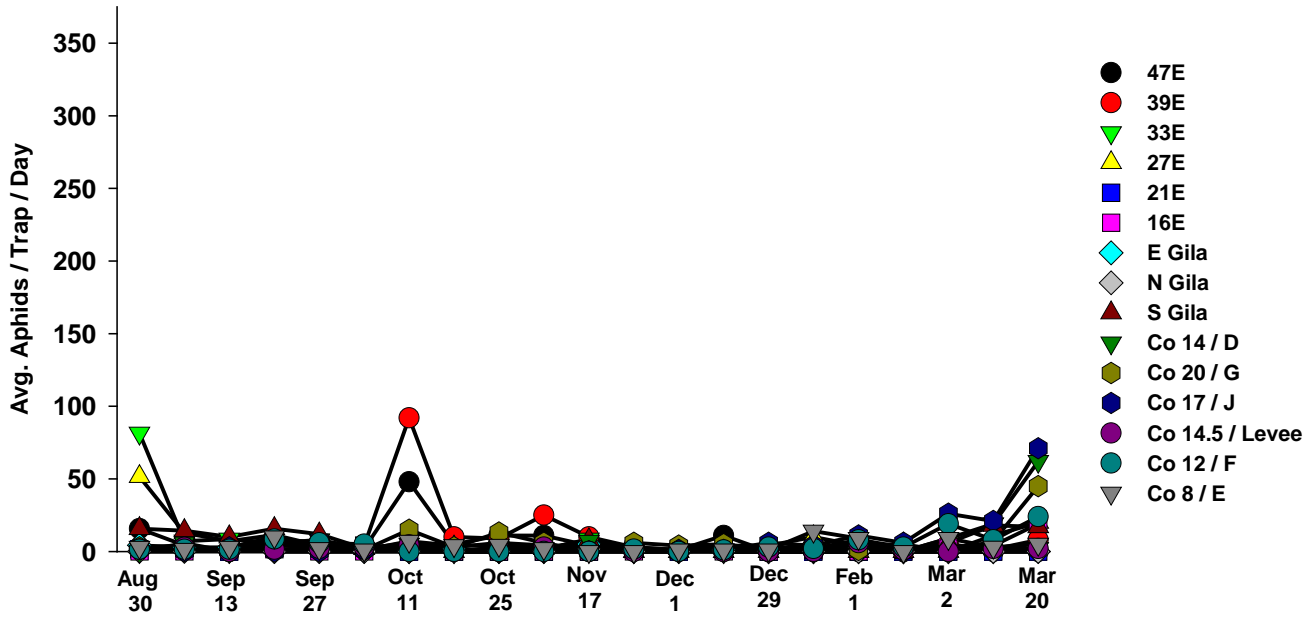
Western Flower Thrips: Trends were similar in both 2015-16 and 2014-2015 and showed that adult thrips tend to move primarily in October (likely coming off of melons, alfalfa and cotton), and then again in Feb and March (albeit slower in 2016). This movement in the spring occurs due to “bioconcentration” 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: Aphid movement was a little heavier in 2015-16, depending on location. 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.

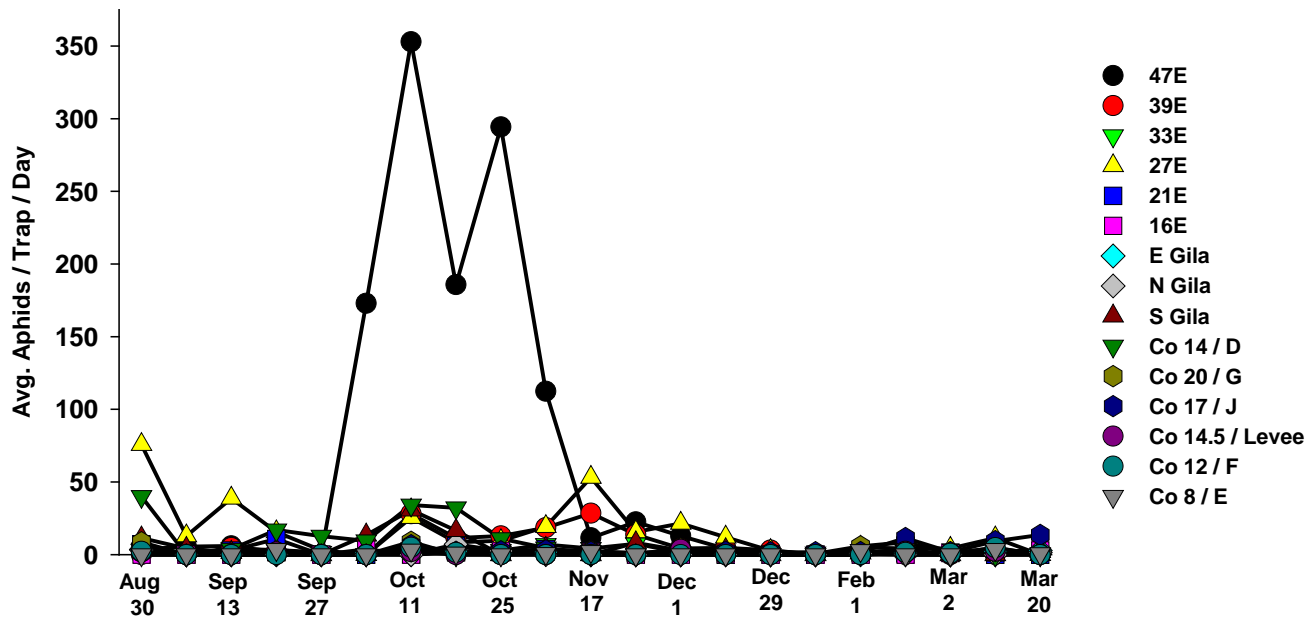
Leafminers

2015-16



Leafminers

2014-15



***Liriomyza* Leafminers:** Leafminers were monitored on sticky traps for the second time in 2015-16. Peak activity was observed Late August (likely coming off of cotton), in October/November from fall melons, and then again at the end of the produce season as they begin to move into spring melons. Cooler temps in the winter, associated with the areawide usage of Radiant in lettuce for thrips control, likely explains the low captures in the spring. The majority of adults trapped with *Liriomyza sativae*, although *Liriomyza trifolii*, was observed on traps in some locations.