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Abstract

This research project investigated included two different kinds of citrus orchards: Conventional & Organic. The purpose of this study was to analyze the phenology of insects among two fields. Trials were done over the course of 7 months. Traps were placed in specific locations to give a broad idea of what kind of insects were in these fields. Furthermore, this investigation was meant to give an idea of what insects are thriving in these fields. To give one an opportunity to use the right insecticides in regard to what insects are in season.

INTRODUCTION

- This presentation will cover a general list of insects that are either beneficial or considered pest among the organic and conventional citrus orchards.
- This research project investigated two different kinds of orchards: Organic and conventional, which are very different in the way they are tended in matters of chemicals such as fertilizers, pesticides, fungicides, and many other cultivation treatments and procedures. This investigation was done over the course of January through July consisting of 7 months.
- Charts and data collected is intended to inform about which months certain pest insects and beneficial insects are most abundant or relatively low.
- It is also intended to give an idea of which pesticides of insecticides are being most effective in controlling pest populations.

OBJECTIVES

1. Identification of beneficial & pest insects in an Organic and Conventional citrus orchards
2. Study the phenology of pollinators in an Organic and conventional citrus orchards from January till July 2013.

MATERIALS AND METHODS

- This study was completed in an orchard located in Weslaco.
- Yellow sticky traps with and adhesive glue on both sides were used.
- 4 Sticky traps were placed in conventional site & 4 in an organic site, they were changed every two weeks over the course of 7 months. January through July.
- Counts of insect were used using a magnifier glasses and a microscope.

Figure 1. Grapefruit orchard map showing locations for organic and conventional sites where sticky traps were placed at Thompson's Farm.



Table 1. Insecticides & fertilizers used in the Organic grapefruit sites.

Date	Organic (Rate/18Acre) estimated	Date	Conventional (Rate/Acre) estimate
1/2	Crop-Up® /60oz	3/12	Treevic®/2.5Oz
1/21	Oroboos®/1.5Gl	3/12	Round Up®/1.5Qt
3/14	Compost/Nitrate/20yards	3/12	Compadre®/12Oz
3/2	SunnHemp® Seed/80Lbs	4/12	THAT® Sulfur
3/21	Organic Fertilizer 7.2.1/4000 tons	5/14	Tactic®/600z
3/24	Soil Cure®	5/14	Lorsban®/7.5Qt
4/5	Top Cop®	5/14	Gem™/36Oz
4/5	Crop-Up® /1000z	5/14	Envidor®/600z
5/22	Top Cop®/3.75Gl	6/29	Nu Cop HB®/17.5Lb
6/20	Fish Fertilizer/5Gl	6/29	Voliam Flexi/140oz
6/27	Crop-Up®/1000z	6/29	Citrus Oil/17.5Gl
6/27	Oroboos™ /2Gl	7/11	Round Up®/19.5Qt
6/27	EcoTec®/4Qt	7/11	Compadre®
7/27	Sp 1/ 2.5Qt		
7/27	Safe-T-Side®/10Gl		
7/27	EcoTec®/10Qt		

RESULTS AND DISCUSSIONS

- Pest seem to follow a trend in both organic & conventional.
- Results showed that there appears to be more pest insects in the organic compared to the conventional

- Beneficial insect ratio appears to fluctuate among organic and conventional.

- Beneficial insects appears to be similar in both Organic & Conventional orchards.
- The Asian Citrus Psyllid was detected on both systems as well as its parasitoids *Tamarixia radiata* and the predatory lady bug *Olla v-nigrum*
- It appears that *Olla v-nigrum* followed the populations abundance of the ACP

Figure 2. Mean ± SE by dates of (a) Pest insects per trap (see figure 3), (b) beneficial insects (see c and d), and spiders per trap; and beneficial species and Asian citrus Psyllid per trap on the (c) Organic and (d) conventional.

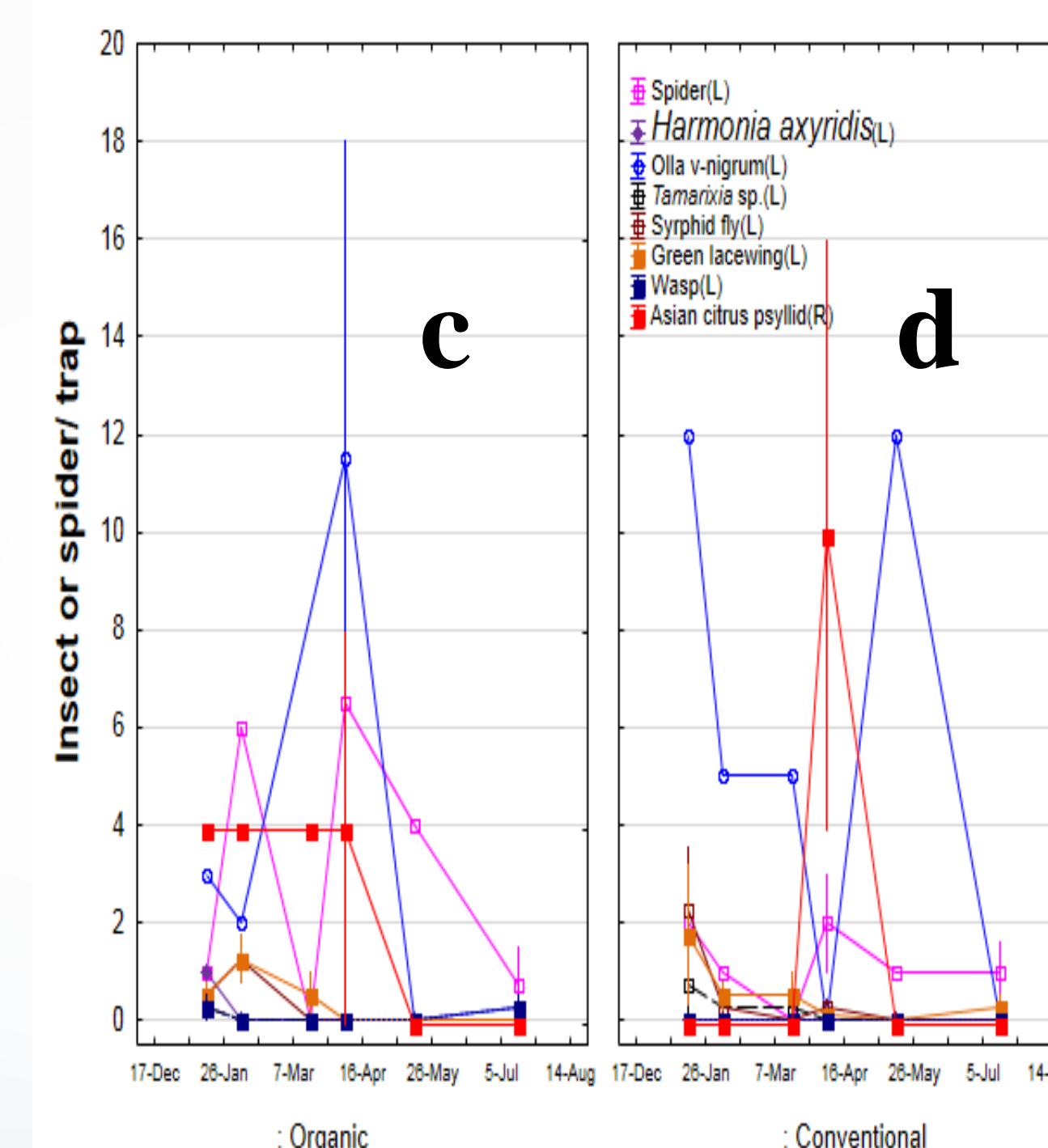
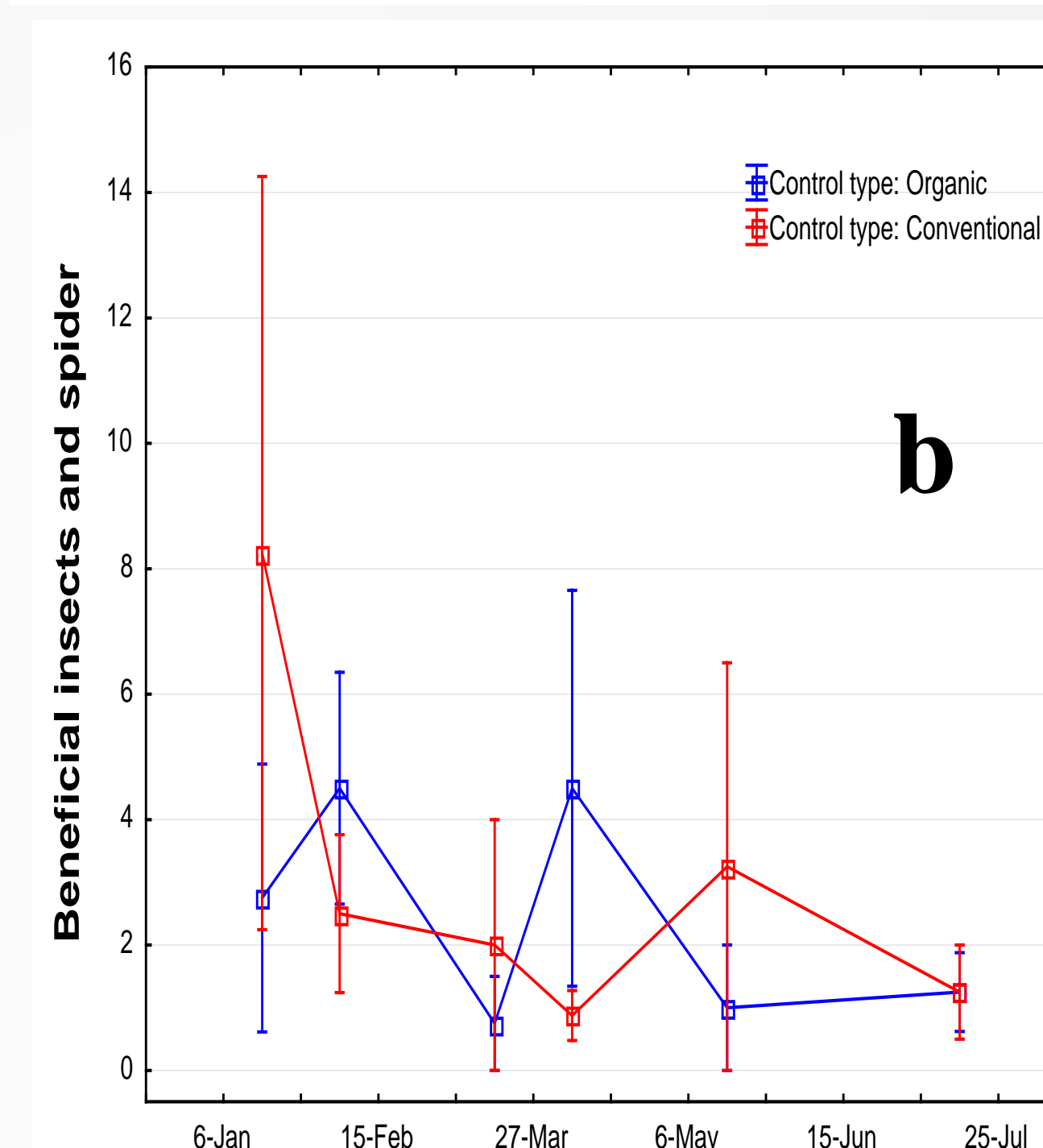
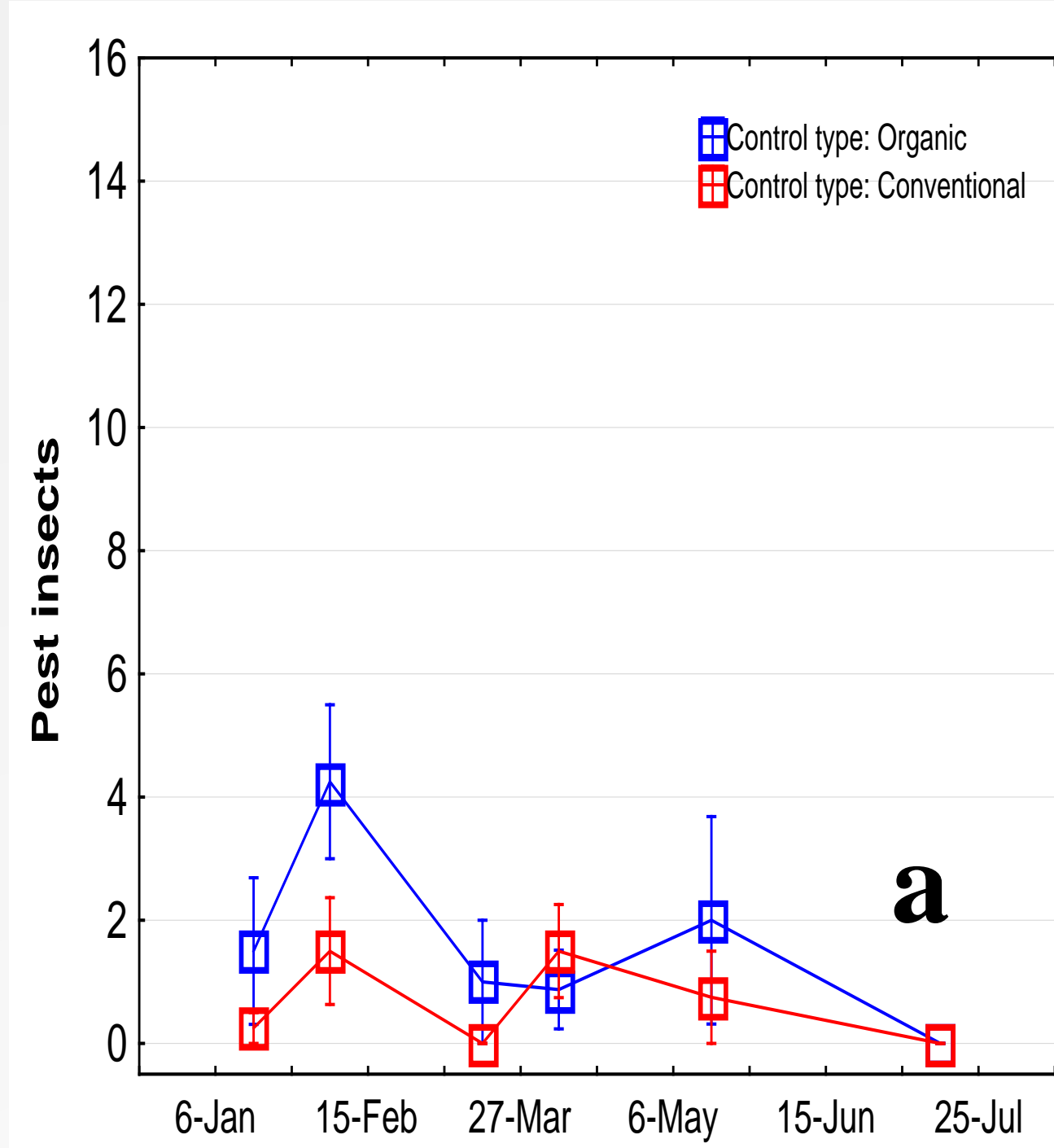
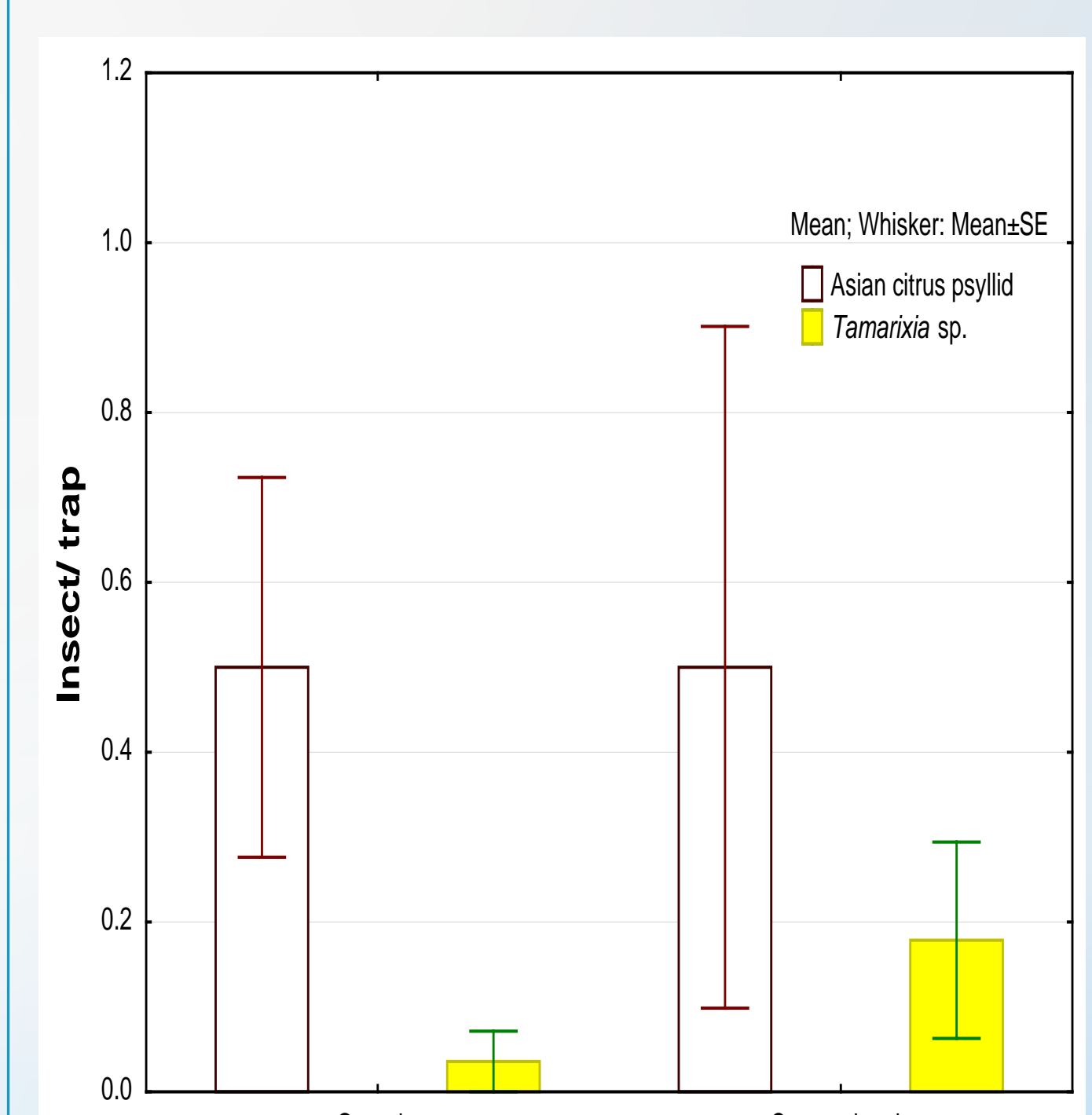
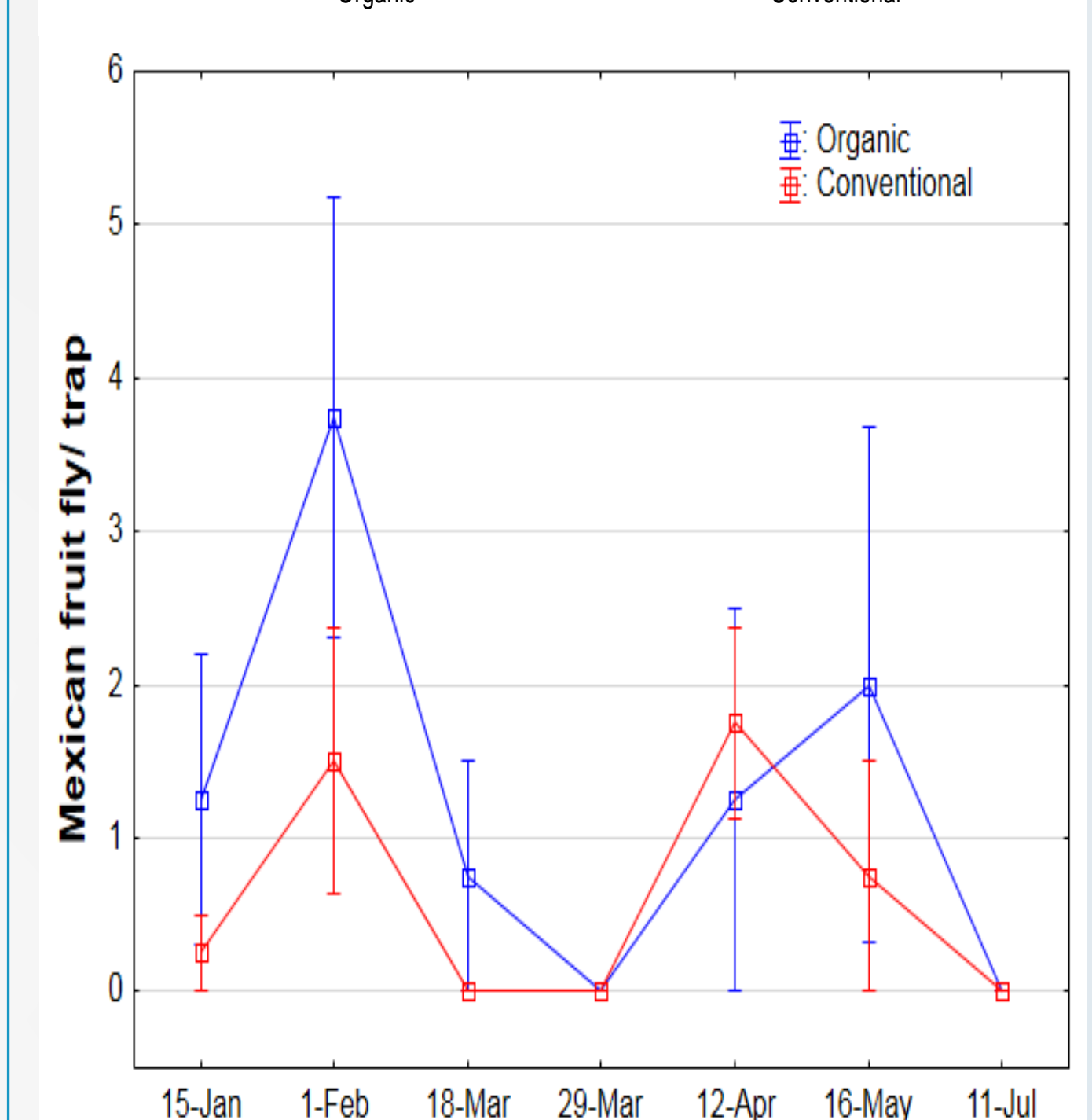
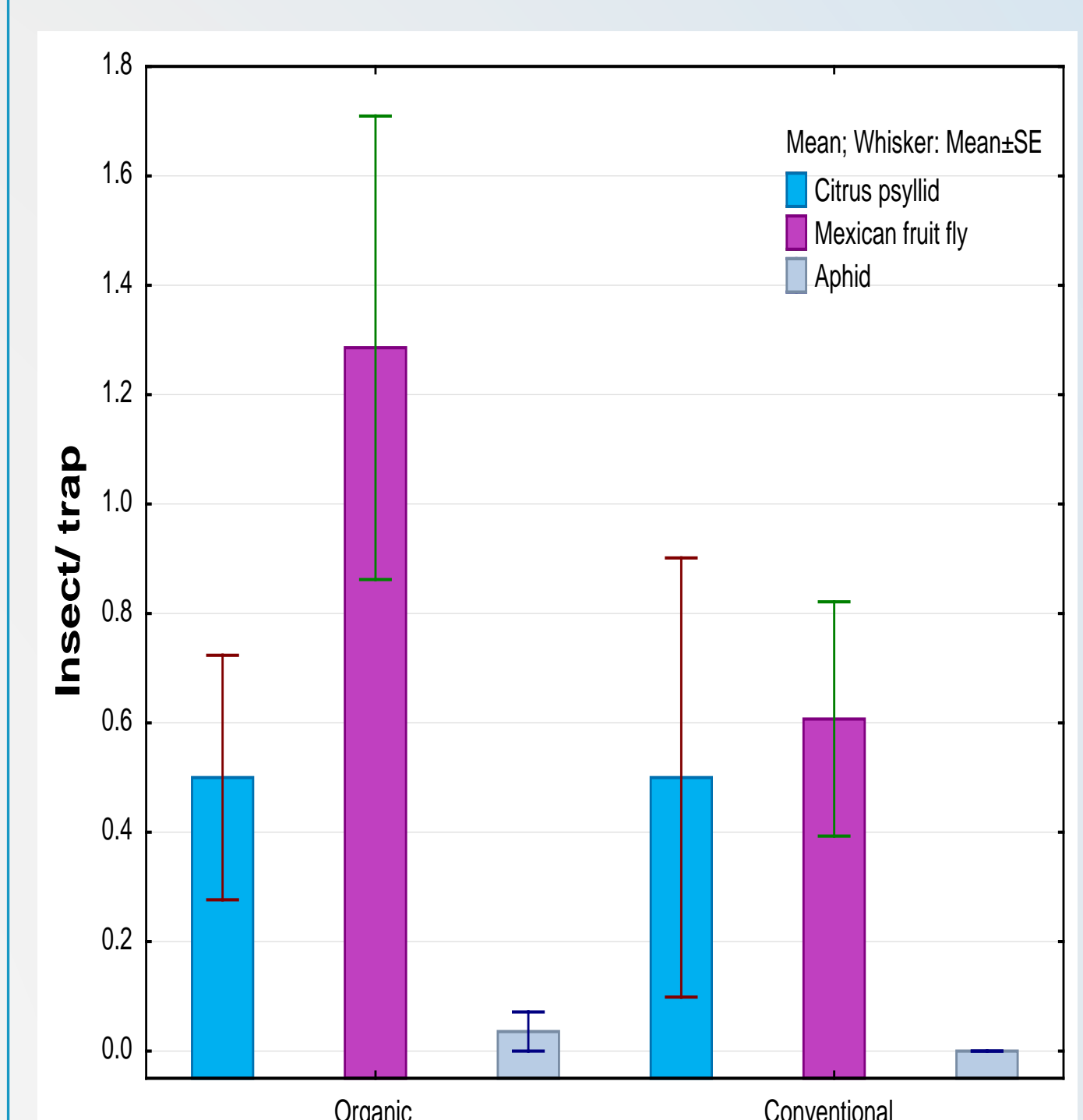


Figure 3. a) Insect pests per trap across all dates, b) Mexican fruit fly (*Anastrepha ludens* (Loew.)) throughout the duration of the study, c) Asian citrus psyllid (*Diaphorina citri*), and its parasitoid (*Tamarixia* sp.) per trap across all of dates.



- Asian Citrus psyllid that transmits a bacterium that causes greening disease or Huanglongbing (HLB) was found in similar number on the organic and conventional orchards
- However the Mexican fruit fly was most abundant on the organic vs. the conventional
- The abundance of Mexican Fruit Flies might be due to the USDA program of release of sterilized flies during February for its Sterile Insect Technique or due to the stall of control of these pests in the Mexican side due to the social unrest in that country just crossing the border
- The Asian citrus psyllid seems to be controlled effectively by pesticides used on both organic and conventional programs
- These insecticides appear that do not affect the parasitoid *Tamarixia* sp.

Lady Bug (*Olla v-nigrum*)



Huanglongbing (HLB) other known as Greening Disease

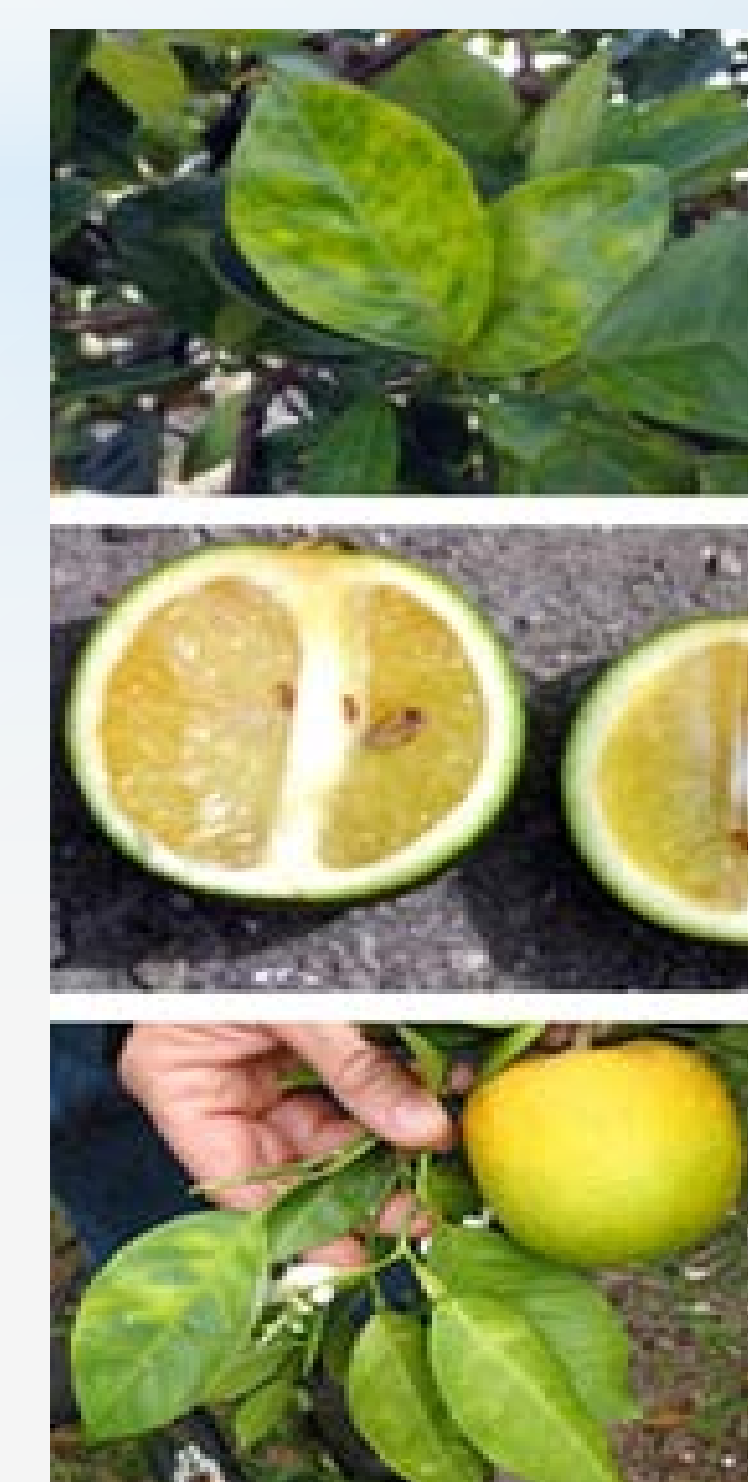


Figure 1. Shows a sample of how HLB looks like, but its appearance should not be mistaken for citrus orchards who simply have nutritional deficiencies. Leaves infected with HLB have a yellowish appearance, but yellowing varies on both sides.

Aphids (being preyed on by its natural enemy).



Mexican Fruit Flies



ACKNOWLEDGEMENTS

Thanks to Deborah Villalon, Gabriela Esparza, Raul Villanueva, and David Robacker for all their support and knowledge. Also Thanks to Thompson's Farm for allowing of the use of his organic farm. Studies were possible thanks from funds obtained from the Organic Transition Program-NIFA-USDA, grant No. 2010-51106-21803