

Pollinators of an Organic City Farm vs. Research Farm

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ABSTRACT

This experiment dealt with comparing pollinators of a urban organic farm and a research farm, we found that pollinators were more abundant on the organic farm. These results were found utilizing yellow sticky traps that were changed every two weeks. All pollinators stuck on traps were tallied, identified and recorded in the laboratory. Although, this study was short from March 2, 2012 to June 10 2012, bees were abundant in early march coinciding with the flowering period of many vegetables and citrus. Beetles, honeybees, and wasps were consistently recorded throughout this investigation.

INTRODUCTION

Pollinators are of the utmost importance to our agribusiness and all of the eco-community. Pollinators pollinate over 75% of all flower plants. A growing problem in our communities is the pollinator population decline. A decline in the population would result in greater numbers of parasites and pathogens, and a limited amount of food supply. This investigation is designed to identify the insect population and the diversity of species in South Texas at Texas A&M University Agrilife and an Organic City Farm.

OBJECTIVES

1. Identification of endemic pollinators in an Organic and Conventional citrus orchards
2. Study the phenology of pollinators in an organic farm from March 2 to June 10, 2012.

MATERIALS AND METHODS

Two locations were used in this investigation, a vegetable field in the Texas A&M Agrilife Research farm in Weslaco and an adjacent urban farm. The two locations were a square plot that grew several vegetables including cabbage, watermelon, and tomatoes. Wooden poles (2" x 1" x 8ft.) were placed at each of the sides of the plot.

Yellow sticky traps were used to collect the insects (one trap per pole). Traps were placed at a 1.5 m height from the ground and were changed every two weeks from March 2 to June 10 in 2012. The traps were collected and stored at 4° C to allow insect removal for identification.

In the process of removing and identifying the insects, the yellow sticky traps were examined using a stereomicroscope and magnification lenses (10X), and the number of pollinators were recorded. The Pollinators were removed from the traps using a citrus based solution to dissolve the adhesive of the sticky trap to better identify the insects.

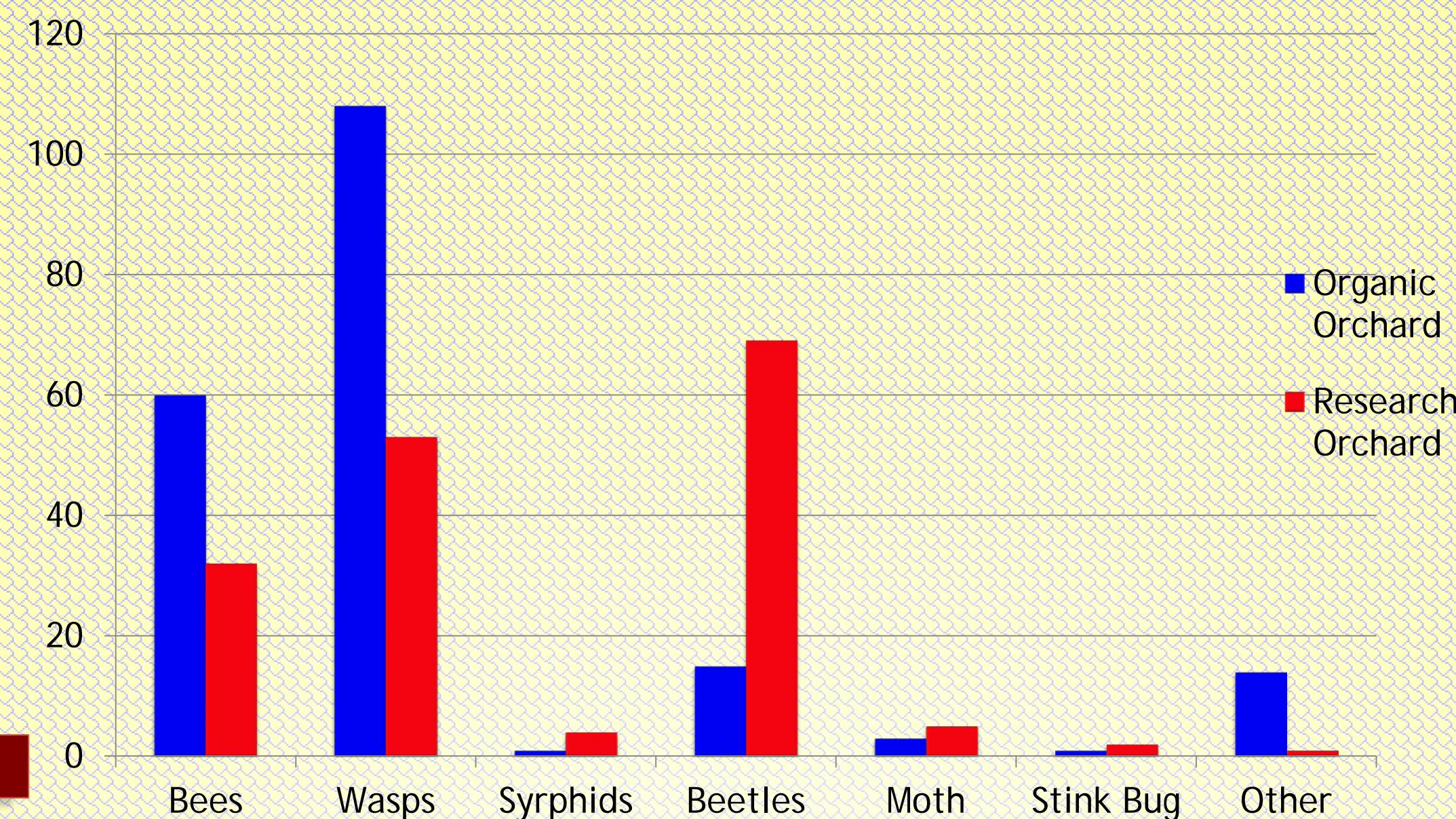
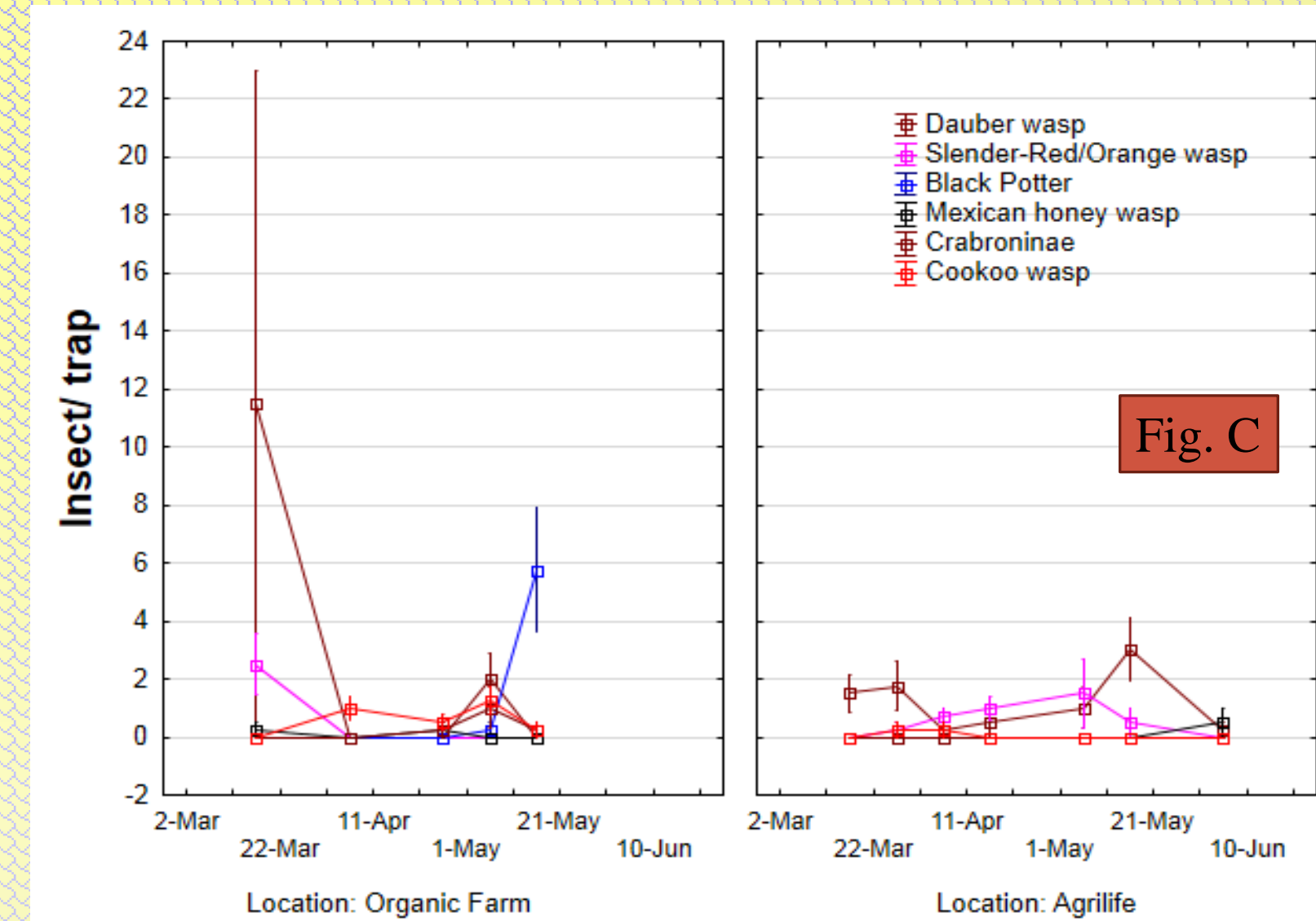
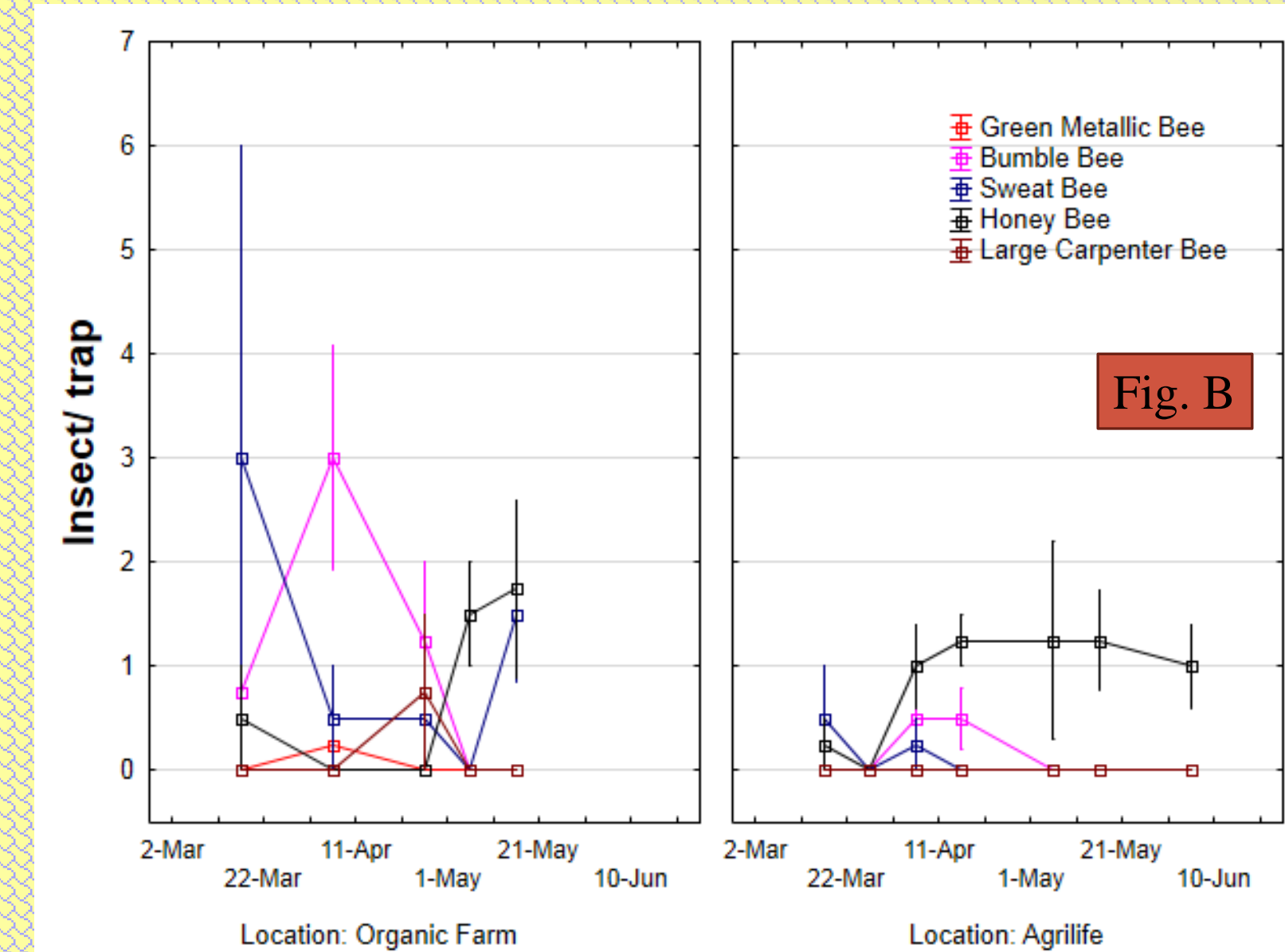
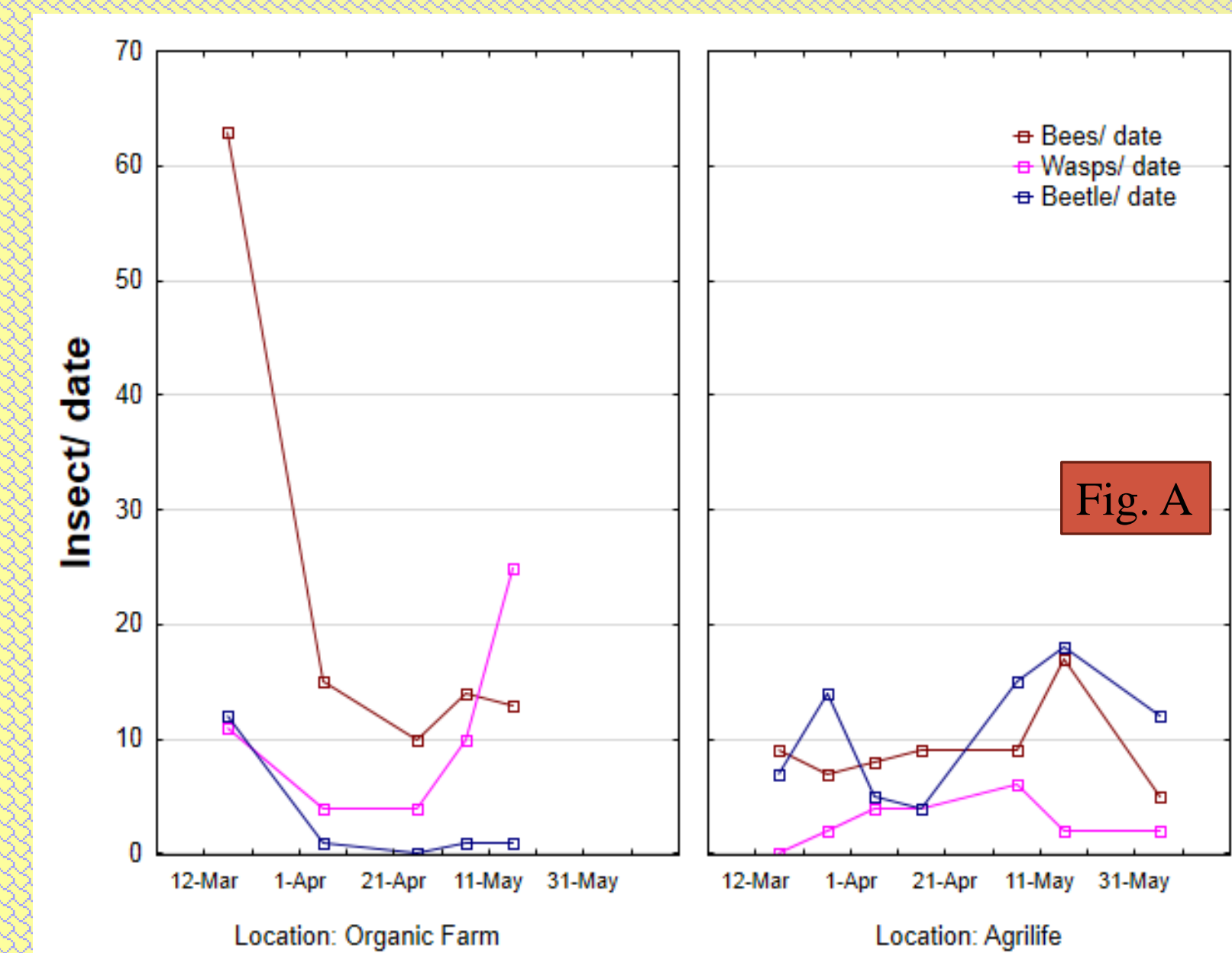
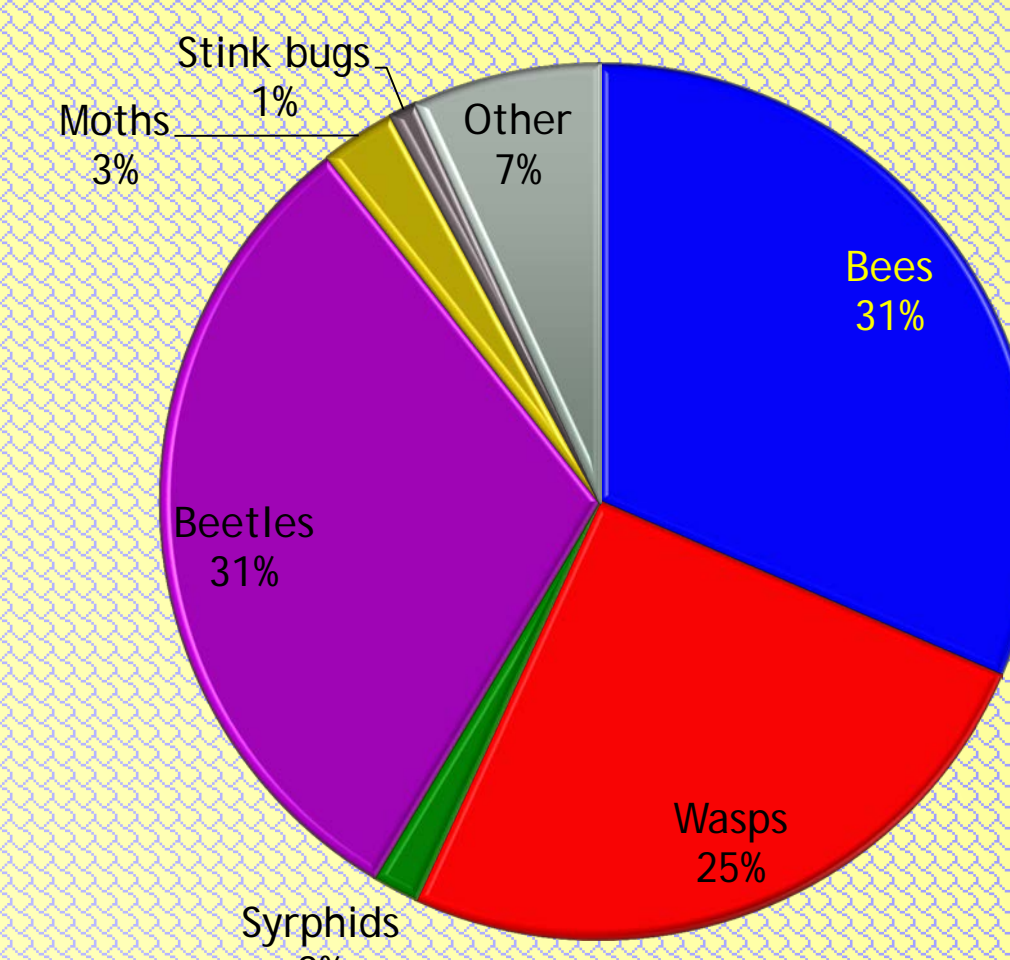


Figure 1. Abundance of major groups of pollinators in an organic and research farm. Wasps were the most abundant. The pie chart shows percentages of the insects in both systems.



Higher number of pollinators were recorded in the Organic Farm vs. the Research farm. It is noticeable that wasps emerged more in the organic farm than the Research Farm (Fig. A & C)

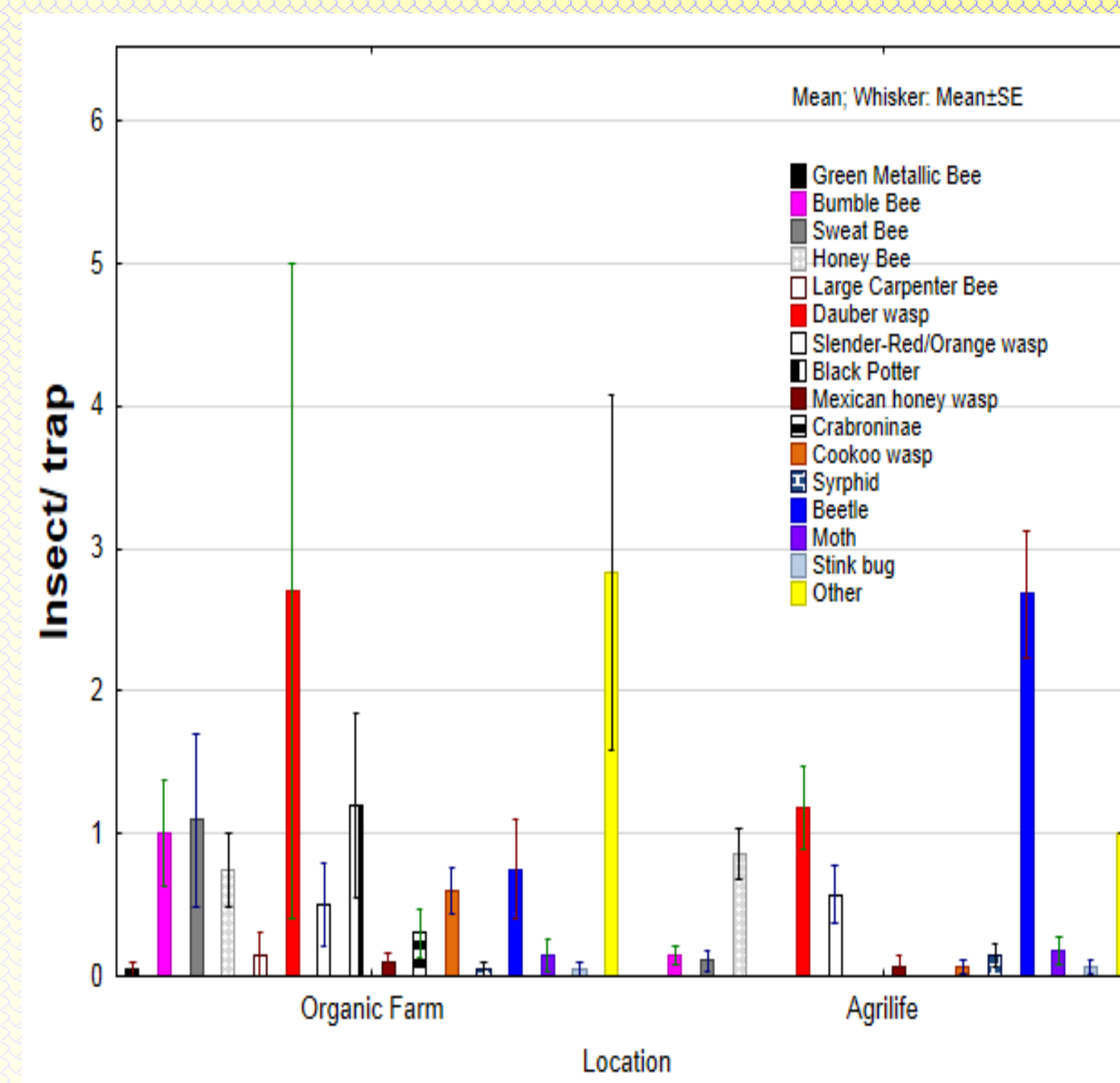


Figure 2. Mean numbers (+SEM) of different pollinator/trap across all the season.

EXAMPLES OF POLLINATORS



RESULTS

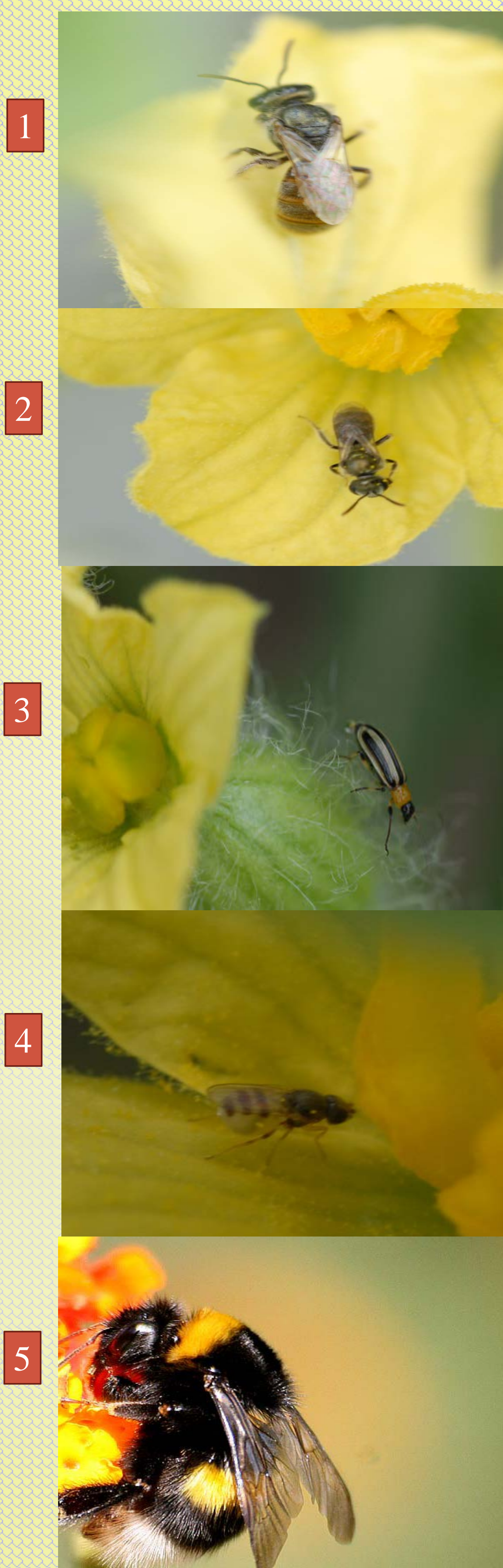
Three major insects orders were identified to have been consistently observed. Bees, wasp, and beetles were consistently observed; collected from the yellow sticky traps. More commonly known insects were honey bees, mud daubers, and beetles. A total of 368 pollinators were identified. Figures 1 & 2 show the mean numbers per trap and the phenological distribution throughout the sampled period in 2012.

CONCLUSIONS

There is noteworthy pollinator diversity on both locations within the city of Weslaco. In general, more pollinators were found in the Organic Farm vs. the Research Farm. Wasps were the most abundant, followed by beetles and honeybees. More pollinators were recorded in the Organic Farm and may be the result that the insecticides used in the Organic Farm were less toxic than the one used in the Research Farm. Other factors that contribute to this difference are air pollution and light pollution.

ACKNOWLEDGEMENTS

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Images 1-4 show native pollinators at the Organic Farm, picture 5 is an image of a Bumble Bee.

