

Ladybirds: detecting defensive chemicals

Some predatory ladybird beetles have become a nuisance to agricultural and residential areas across the United States in the last several years. Many of the invasive species were originally brought to the United States to help control the populations of aphids. It is now necessary to provide an understanding the defensive chemical profiles and the dynamics of the chemical production throughout the life stage in predatory ladybird beetles.

The invasive species, *Harmonia Axyridis*, and native species *Hippodamia Convergens*, will be studied through all four of their instar stages. As the lady beetles progress through their larvae stages, an increase in each of the defensive chemicals is expected to be observed. UV-VIS, Fluorimeter, HPLC, and GC-MS instruments will be used to analyze and quantify the different alkaloid defense mechanisms that they produce. Standards for all of the defensive mechanisms will be made, and standard curves will be used to quantify each stage of the lady beetles. Potential defensive compounds that will be specifically identified

1. Perry, W.; Santiago, M. F., *Detection and determination of alkalid compounds in lady bird eggs*. Abstracts of papers. SERMACS-SWRM 2015, Combined Southwest Region meeting and the Southeastern Regional meeting of the American Chemical Society. (2015)
2. Kajita, Y.; Obrycki, J. J.; Sloggett, J. J.; *Intraspecific alkaloid variation in ladybird eggs and its effects on con- and hetero-specific intraguild predators*. *Oecologia* 2010, 163 (2), 313-322.
3. Camarano, S. et al. *Chemical defense of the ladybird beetle Epilachna paenulata*. *Chemical ecology*. 2006, 16, 179-184