

Emily Mosow

My Summer 2012

This summer I performed a variety of tasks including rearing a variety of different insects, testing tarnished plant bug colonies using various doses of novaluron, and testing bollworms for a pyrethroid resistance monitoring project. The insects I mostly handled this summer were tarnished plant bugs and bollworms. With bollworms, I took the live moths collected from pheromone traps each week and placed them in vials treated with a discriminating dose of cypermethrin for twenty-four hours before rating them for survival. Ten of the dead moths and all of the live moths were placed in tubes and frozen. Tarnished plant bug adults collected from different field sites were placed in tubes clearly labeled based on hosts sampled at each location. Also with the tarnished plant bugs, I helped raise nymphs to adults on different tissue types such as cotton and mare's tail before placing them in tubes to be frozen. The report from Jackson et al. (2012) described the test that occurs after the insects have been frozen. Insect wings were cut off and placed in small tins that were then rolled. The tins are then placed into an elemental analyzer/mass spectrometer that uses combustion to break down the wings into their elemental contents. By seeing what isotopes of carbon and nitrogen are present, it can be determined what type of plants, whether C₃ or C₄, the insect developed on as an immature. However, stable carbon isotope analysis alone does not distinguish between plant species within a given plant type, such as whether it developed on C₃ plants like cotton or soybeans. The use of an elemental analyzer/mass spectrometer does help narrow the plant types down (C₃ vs. C₄) and

in some cases can distinguish between certain plants. This was shown by Jackson et al. (2012) where tarnished plant bug adults within a given type that developed on corn could be distinguished from those that developed on pigweed (both C_4 plants). This is important because it helps scientists gain a better understanding of the movement of insects from one plant host to another over time in hopes of having a better understanding of insect control possibilities outside of major crops or prior to moving into particular crops.