Examining the role of cover-cash crop rotations on arthropod community dynamics in LRGV

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Introduction
• Ecological principles-based farming such as the adoption of biological control of herbivores can improve the resilience of the agroecosystem
• Cover crops provide a potentially cost-effective method of improving habitats to increase the populations of beneficial arthropods and thus reduce pest incidence
• The impact of cover crops on the arthropod community dynamics in the management of pest populations is poorly understood
• The objective of this study is to investigate the role of cover-cash crop rotations on arthropod community dynamics

Hypothesis
• Cover crop treatments would attract beneficial insects such as predators, parasitoids and pollinators
• The parasitoids as natural enemies would repel/reduce herbivory thereby benefitting the subsequent cash crop

Experiments
Insect diversity
• Insect diversity on the cover and control plots were assessed on 4 farms in the Hidalgo county of the LRGV
• Insects’ populations were assessed using pit fall traps, sticky traps (blue and yellow), and pollinator traps
• The collected traps were brought back to the lab and the insects were classified based on their respective orders
• Statistical analysis was performed using Generalized Linear Models with Poisson distribution

Results
• About 6,615 insects were collected and have been classified to their order
• Arthropod community did not vary across the four fields
• There was no significant difference between the population of the pollinators in the cover crop and the control treatments yet.
• There was no significant difference in the population of non-pollinators across the field
• Aphids, earwigs, and Megachile bees were common in the sticky, pitfall, and the pollinator traps respectively across the four fields

Conclusion
• Our preliminary result shows that there is a significant difference in the population of the arthropods based on their feeding guild
• Preliminary analyses also show no treatment differences for arthropod community dynamics
• We speculate that the community composition will vary based on cover crop stand later in the season
• Additional trapping and analyses are in progress

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Reference