

Purdue University
Department of Entomology
Undergraduate Capstone
Project Summary

Name of Student:

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Project Title:

Costa Rican Coffee Fields: A Comparison of Insect Biodiversity in Modern And Traditional Farming Systems

Project Summary:

Coffee in Costa Rica is either grown in a traditional system in which the coffee plants are grown among the native plants, or in a modern system, in which the native plants are removed and the coffee grown as a monoculture. In total, we collected from six different fields from three different location sites. Our collecting method was to take ten steps in to the field and then take twenty sweeps of the coffee plants while continuing into the field.

The first sample was taken on May 29, 2013 from a field belonging to the Cabecars, who are an indigenous people and use the traditional method of growing coffee. On May 30, 2013, a sample from Aquires, a large commercial coffee farm, was taken from a modern system. Finally, on June 1, 2013, four samples, two from each system, were collected from CATIE, a university in Costa Rica that focuses on sustainable agriculture. Samples from CATIE were taken from three fields of each systems to compare the biodiversity of insects to the order and selected family levels. Overall, a total of 462 specimens where collected from eight orders: Collembola, Thysanoptera, Lepidoptera, Coleoptera, Diptera, Hymenoptera, Hemiptera, and Orthoptera. The majority of the famiies found were in the Diptera (188), Hemiptera (119) and Coleoptera (68). Hemiptera sampled from CATIE in both traditional and modern systems showed a diversity of seven families but only the family Cicadellidae was found in both systems, making up 45% on all Hemiptera collected. The Rhyparochromidae, which is considered rare in North America, constituted 30% of the total Hemiptera collect.

Though there were differences in the fields, more samples would need to confirm any differences. Future work could also include identifying the other orders collected down to at least family level and continuing to identify the Hemipteras down to species.