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Abstract

Agroecosystems are facing a number of challenges, including declines in biodiversity and associated ecosystem services, emphasizing the need to change the current practices and approaches used within the industry. Ecological intensification, a management strategy that utilizes ecological processes to increase the production of crops while also reducing environmental impacts compared to conventional farming practices, provides a solution to counteract these harmful impacts. The field of landscape ecology provides insight into how ecological intensification practices could be integrated into landscape-level management. This field has found contrasting outcomes in various locations and crops, highlighting the context-specific nature of the interactions between the landscape and ecosystems and the need for tailored approaches to ecological intensification. In this thesis, I contribute to this growing field by exploring the relationship between the landscape and avocado pollinator biodiversity and pest abundance in the Bay of Plenty, which is the primary region for avocado orchards in New Zealand. In Chapter 2, I analyzed how the landscape surrounding avocado orchards impacted various aspects of insect pollinator communities, including species richness, evenness, abundance, biomass and mean body mass. Additionally, in Chapter 3, I investigated the influence of the landscape on the abundance of pest species such as thrips, leafroller, mealy bugs and scale as well as its effects on yield and fruit quality. My synthesized findings show that the dynamics between the landscape and avocado pests and pollinators within agroecosystems are shaped by multiple variables. This thesis also highlights a tradeoff where increasing pollinator abundance is accompanied by higher thrips abundance. Consequently, to balance the control of pests and pollinator conservation, holistic landscape management strategies are crucial. In conclusion, results from my thesis offers valuable insight into the relationship between the landscapes and avocado pests

and pollinators in agroecosystems, highlighting the importance of comprehensive landscape management strategies to increase sustainable avocado production.

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dashed arrows indicate non-significant relationships that were retained in the minimum adequate SEM. Numbers adjacent to significant effects indicate the raw path coefficients. Abbreviations are: MBS = mealy bug and scale; Fdiv = functional divergence; SR = species richness..... 137

variance explained by the model (R^2). Abbreviations are: MBS = mealy bug and scale insect pests; Fdiv = functional divergence; SR = species richness. 140

