

Population Dynamics and Epidemiology of Navel Orangeworm Damage to Pistachios: Comparing Application Efficacy: Ground vs Air

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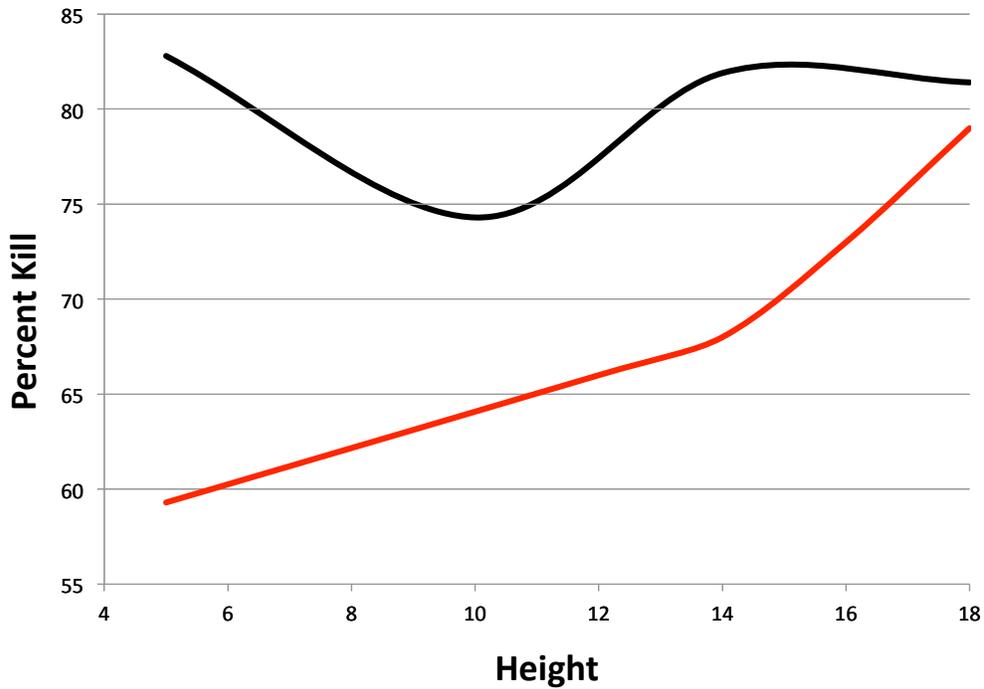
INTRODUCTION

The purpose of my research is to improve control of navel orangeworm by a combination of improved spray timing, increased application efficacy, proper insecticide choice and rotation, and the integration of mating disruption, into an existing control strategy. Additionally, I monitor the pattern of harvest damage, using grade sheets supplied by individual growers and processors, with the goal of improving navel orangeworm control. In this summary, I report data from application research

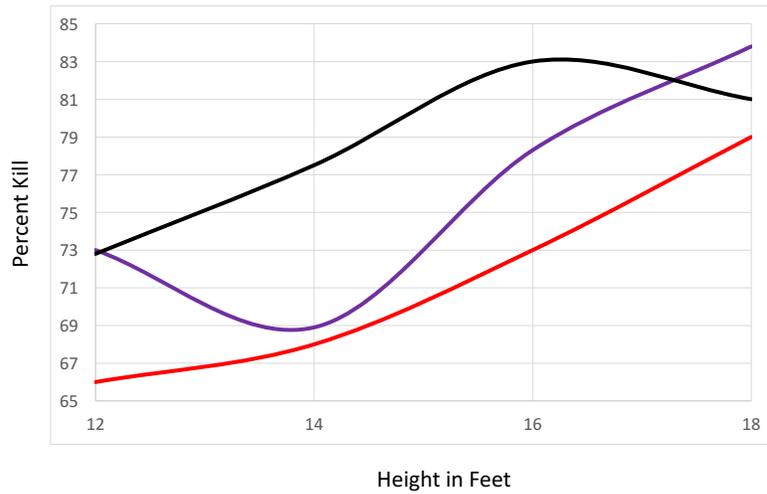
RESULTS

In 2016, I monitored an aerial application of Altacor applied at 15 gpa (4.5 oz Altacor/ac). Using my filter paper bioassay, percent kill was assessed at 10-18 ft with additional monitors placed at 5 ft above ground. Coverage was even throughout this range, and the study was repeated in 2017 using a lower volume, 10 gpa, with Altacor at 4.5 oz/ac+LambdaCy at 5.12 oz/ac. At the lower volume of 10 gpa, coverage was not even and dropped precipitously from 18 ft to 5 ft.

Black line is 2016, Altacor 4.5 oz/ac in 15 gpa
Red line is 2017, Altacor 4.5 oz/ac + LambdaCy in 10 gpa



I also compared ground application at 50 gpa using multinozzles to the aerial application at 10 gpa. The adjuvant used in the aerial application was Cohere, while the ground applications used Kienetic and HiWett. Despite some variation at 14 feet, both ground applications were the same and both were better than the aerial application. At 12 feet, the 10 percent difference in percent kill between ground and air is most pronounced (Chi Square of 6.69, $0.01 > P > 0.005$).



CONCLUSION AND PRACTICAL APPLICATIONS

My past research has demonstrated that application efficacy increases with spray volume (200 gpa was better than 100 gpa+multinozzles). If spray volume can be decreased to 50 gpa, using a silicone-based adjuvant, considerable time will be saved for an application. However, I did not compare the efficacy of ground sprays at 50 gpa to applications made at 100 and 200 gpa. This will be the focus of my 2018 pistachio research, as well as conducting further assessment of aerial application. If the research demonstrates that there is no loss in efficacy, growers may wish to consider spraying with a reduced volume.