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ATTRACT-AND-KILL STRATEGY FOR CONTROL OF WALNUT HUSK FLY

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Project status in 2024: Year 1 of 2

PROJECT OBJECTIVES:

Improve the attract-and-kill strategy utilizing δ-heptalactone and δ-hexalactone aggregation pheromones as attractants and to improve monitoring methods using δ-heptalactone and δ-hexalactone aggregation pheromones.

BACKGROUND

Walnut husk fly (WHF) is a significant pest of walnut and has increased in importance over the past 20 years. Control of WHF is based on repeated applications of insecticides to control the adults. Initiation of the spray program and monitoring the efficacy of the spray program is based on captures in yellow panel traps baited with an ammonium carbonate feeding lure. An improvement in monitoring through increased fly catches would aid in determining the proper time to initiate an insecticide control program and aid in determining the efficacy of the control program. The recent discovery of the WHF aggregation pheromone (δ-heptalactone and δ-hexalactone) offers the opportunity to attract both males and more importantly females to an insecticide latent bait or traps which could reduce the WHF population with little or no exposure of the crop to the insecticide.

KEY FINDINGS

The addition of 25 to 100 mg of δ-heptalactone significantly improved the attractiveness of GF-120 as compared to GF-120 alone as an attract-and-kill product and as little as 5 mg of δ-heptalactone showed improved attractiveness of GF-120 diluted with water as compared to the GF-120 dilution alone. The purity of δ-heptalactone did effect the attractiveness but the impurities in δ-heptalactone can be overcome by increasing the amount of δ-heptalactone. We are now ready to release δ-heptalactone polymer plug lures for monitoring WHF for grower/PCA use. We are recommending a use rate of 200 mg of pure δ-heptalactone or 400 mg of impure (50%) δ-heptalactone with a replacement of the lures every 4 to 5 weeks. The lures can be used with or without commercial ammonium carbonate lures.