PP-060 [Bee Health]
Effects of mosquito larvicides and adulticides applied via truck-mounted and aerial spraying on honey bees (Apis mellifera) in Florida

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Ultra-low volume (ULV) mosquito adulticides are common in Florida, as they are highly effective at controlling mosquitos. Additionally, there are many Florida mosquito control districts in which water bodies are treated with mosquito larvicides. Currently, not much is known about how simultaneous exposure to these chemicals in realistic field scenarios will impact overall honey bee colony strength. In this study, we determined the impact of field-realistic mosquito control practices on colony strength parameters by placing 15 new honey bee colonies in three "hotspot" treatment sites (five colonies per site) where mosquito control operators treat three to five times during the space of three months. We also placed 15 new colonies in three sites (five colonies per site) receiving little to no mosquito treatment applications (negative control sites). The "hotspot" treatment sites were treated with Mosquito Mist II®, Dibrom®, and Vectobac12AS®. Colony strength parameters were measured before and after the three-month treatment period. Samples of hives matrices (pollen, nectar, bees, brood) were collected from all colonies and analyzed to determine the residue levels of mosquito control products present in the hives. Some mosquito control product residues were found at a low concentration in hive matrices (from 0.03 to 70.99 ng/g), with a high prevalence of chlorpyrifos in all of them. However, no significant differences were observed in colony mortality or health strength parameters between colonies located in treated and control sites, as well as no direct impact of a spray event was observed in adult bee mortality. The resulting data will be used to inform best management practices for mosquito control programs and apiculture in the future.