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Drivers of Colony Losses

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Abstract

Over the past decade, in some regions of the world, honey bee (*Apis mellifera L.*) colonies have experienced rates of colony loss that are difficult for beekeepers to sustain. The reasons for losses are complex and interacting, with major drivers including varroa and related viruses, pesticides, nutrition and beekeeper practices. In these endeavors it has also become apparent that defining a dead colony, and singling out the effects of specific drivers of loss, is not so straightforward. Using the class of neonicotinoid pesticides as an example we explain why quantifying risk factor impact at the colony level is at times elusive and in some cases unpractical. In this review, we discuss the caveats of defining and

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