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A mathematical model for Honeybees-Varroa Destructor-Acute Bee Paralysis Virus complex

The western honeybee is in trouble. Recent years have seen honeybees in distress, with up to 35% of colonies breaking down annually. These losses are usually associated with the Colony Collapse Disorder or wintering losses. The main culprits causing colony collapse are the varroa mites and the deadly viruses they carry. Focusing on the Acute Bee Paralysis virus, we present a simple ODE model for the honeybee-mite-virus complex, which we study with analytical and computational techniques.