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Honeybees play an important role in sustaining our ecosystem. However, the rapid decline of honeybee population have sparked a great concern worldwide. Many field and theoretical studies have shown that the collapsing of honeybee colonies may be due to the infestation by the parasitic Varroa mite, the varied viruses that they carry, and the nutritional effects due to global warming. This talk, we would provide our recent modeling work combined with experimental data to explore how synergistic effects of parasite, diseases and nutrition on the health of honeybee colonies. (Received September 24, 2018)