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PP-127 [Bee Health]

Novel Approach to Hive Health and Varroa Control

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ABSTRACT

Annual Bee hive losses of 40-50% have become common, with recent years trending even higher. These losses are often attributed to a combination of environmental, chemical, and pathogenic components. Solutions are needed that can reduce the impacts of external stressors while simultaneously cleansing the hives of pest and pathogenic pressures to promote healthy and vigorous hives. However, current methods of treating hives can have their own toxicity to bees or their human caretakers, can be difficult to implement, and can induce resistance in the intended target. Here we show results from hive treatments conducted in Corrales, New Mexico, that suggest that **ApiVera enhances hive resilience, improves brood health, and contributes to higher survival rates, while simultaneously reducing pathogen load in the hive, including Varroa mite and total microbial counts, using an oxidative chemistry that is less likely to produce resistance, making it a promising alternative or supplement to conventional beekeeping management strategies.**

PROBLEM

Traditional beekeeping relies heavily on chemical miticides to manage colony health, but **resistance and negative impacts on bee physiology demand alternative solutions**. This study investigates whether ApiVera nutrient treatments improve hive survival and colony health compared to untreated controls. Specifically, we examine brood viability, adult bee coverage, and overall hive weight as indicators of hive resilience.

METHODOLOGY

The King Field Trials were conducted in Corrales, New Mexico (August–September 2024), utilizing a time-paired experimental design over a 3–4 week period. Twelve single hive bodies were assigned to three groups:

- Twice-weekly ApiVera treatment
- Weekly ApiVera treatment
- Untreated control

Hive Health Metrics (Recorded Weekly)

Bee coverage (%) | Brood frames (#) | Honey frames (#) | Hive Weight (kg)

ApiVera treatments were applied using a fogging system, and data collection included alcohol washes for mite assessments, brood health evaluations, and hive weight tracking.

Weekly Treated Hives	Before Treatment RLU*	After Treatment RLU*	Absolute Reduction	Log Reduction
Hive 1	15,334	450	14,884	1.53
Hive 2	6,806	0	6,806	Complete
Hive 3	17,277	0	17,277	Complete
Hive 4	927	0	927	Complete

***RLU (Relative Light Units):** A higher RLU value generally indicates a higher level of contamination or biological activity.

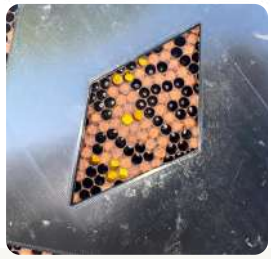
RESULTS & CONCLUSION

ApiVera-treated hives demonstrated a **fourfold increase in hive survival** compared to controls.

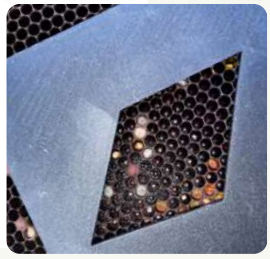
Key findings include:

- **Higher bee coverage** in treated hives (35.0% weekly, 33.9% twice-weekly) vs. controls (22.3%).
- **Increased brood frame numbers**, with twice-weekly treatments showing the highest brood viability (8.7 vs. 6.0 in controls).
- **Improved hive weight**, supporting colony productivity.

These results suggest that ApiVera enhances hive resilience, improves brood health, and contributes to higher survival rates, making it a promising alternative or supplement to conventional beekeeping management strategies.



Hive B (treated weekly with ApiVera): Stabilized mite pressure and maintained robust colony health despite challenges. This hive thrived and showed a 4x higher survival rate compared to the untreated controls.



Hive F (control): Experienced a 17.2% increase in mite pressure, colony decline, and eventual queen abandonment during Week 3.

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TERRAVERA APIVERA

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