

# [PP-023] Use of different commercial formulations of pollen and honey substitutes to promote population growth of *Apis mellifera jemenitica* beehives in Fujairah, UAE

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## INTRODUCTION

Honey bees, like any other animal, require essential ingredients for survival and reproduction. What we know about honey bee nutrition now was learned mostly during the 50s-70s, and recent studies specifically on honey bee nutrition are very few. Honey bees require carbohydrates (sugars in nectar or honey), amino acids (protein from pollen), lipids (fatty acids, sterols), vitamins, minerals (salts), and water. Additionally, these nutrients must be present in the right ratio for honey bees to survive and thrive (Huang, 2018). A well-nourished bee from the start of its larval development has a higher likelihood of withstanding other stressors and having an extended lifespan. However, honey bee nutrition is complex and dynamic due to changing needs with development and variation in the environmental supply (Tsuruda, 2023). In deficiency of natural pollen sources synthetic pollen enriched nutrition can complement honey bee broods which is important for young bee's reproduction, brood development and conservation of bee colony and honey production (Ullah, 2021).

## METHODS

This study aims to evaluate the effect of commercial formulations of pollen and honey substitutes directly on the growth of the adult bee population in the tested hives. The experiment occurred in a commercial apiary in the emirate of Fujairah - UAE, between 02/21/2023 - 03/25/2023. Twenty *Apis mellifera jemenitica* beehives were separated into four lots of five hives each. Three lots received commercial protein patty feed (1 kg each) on 02/21/2023 and 03/13/2023. The first lot - T1- received Apipasta Plus, produced by Zukan, S.L.U. - Spain. The second batch - T2- received Activator, produced by Super Bee - Oman. The third batch - T3 - received Super Activator, produced by Super Bee - Oman. The fourth batch - T4 - was the Control, not receiving any treatment. The five hives of each of the four treatments were evaluated for population growth according to the coverage of frames with adult bees on 02/21/2023; 03/03/2023; 03/13/2023; 03/25/2023.

## RESULTS

Treatments/Dates of evaluation	21-Feb	3-Mar	13-Mar	25-Mar
T1	5	6,8	9	10
T2	4	4,4	7,4	6,8
T3	5,8	7	8,8	7
T4	4,8	5,8	8,4	5

Table 1. Average of number of frames covered with adult worker bees in five hives belonging to each type of treatment, evaluated on 21/02/2023; 03/03/2023; 13/03/2023 and 25/03/2023.

T1 showed better efficiency (100%) in promoting the population growth of the hives. In 33 days, starting with only five frames covered with adult bees (21/02/2023), it showed complete coverage of standard Langstroth hives with ten frames covered with adult bees on both faces on the day of the last evaluation (25/03/2023). The smallest population growth was in T4, which presented a value of only 4.2%, starting with 4.8 frames covered with adult bees (21/02/2023) and ending the experiment with five covered frames (25/03/2023). T2 presents growth of 70%, starting with 4 frames covered with adult worker bees on 21/02/2023 and 6,8 frames at the end of experiment.(25/03/2023). T3 showed intermediate growth values of 21% of .



## CONCLUSION

Apipasta Plus In T1, it represented the best treatment for developing the bee population in the pre-harvest period. In about 30 days, it is possible to stimulate the growth of the hives and use this management technique to increase the productivity of honey or other hive products.

## REFERENCES

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