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”YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES”

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Sensory Evaluation of a Long-Term Historical Honey Collection (1969–2017) from the Banat Region

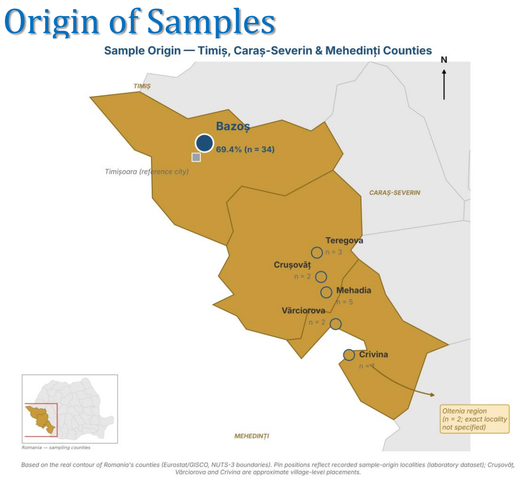
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Abstract: *Beyond its chemical composition, honey’s sensory profile — color, aroma, consistency, and taste — offers a direct, practical measure of quality, authenticity and market value, becoming particularly relevant when applied to honey with an extended storage history. The present study focuses on a historical collection of 49 honey samples originating from the Banat Region, harvested between 1969 and 2017 and preserved under appropriate conditions by a beekeeping family from Bazoș, Timiș County, representing a storage interval of 57 years, with no direct equivalent in the international literature, where comparable studies rarely exceed 1–2 years. The samples were classified according to their predominant botanical origin into seven types: acacia, polyfloral, sunflower, mountain, meadow, vetch and rapeseed honey, acacia honey being predominant within the collection. The aim was to characterize the organoleptic properties of these samples and evaluate the influence of long-term storage on their sensory profile, analyzing color, crystallization appearance, aroma, and taste, comparatively by honey type, harvest decade, and area of origin.*

• Introduction

Honey’s sensory profile — color, aroma, consistency and taste — offers a direct, practical measure of quality, authenticity and market value, becoming particularly relevant when applied to honey with an extended storage history. The present study is built around a historical collection of 49 honey samples originating from the Banat Region, harvested between 1969 and 2017 and preserved under appropriate conditions by a single beekeeping family from Bazoș, Timiș County — representing a storage interval of 57 years, with no direct equivalent identified in the international literature, where comparable studies rarely extend beyond one to two years.

• Geographic Origin of Samples



• Material and method

The 49 samples were classified by predominant botanical origin into seven types: acacia, polyfloral, sunflower, mountain, meadow, vetch and rapeseed honey. Each sample underwent organoleptic analysis covering color and crystallization appearance, aroma intensity and type, and taste, including sweetness and persistence (aftertaste). Observations were recorded comparatively by honey type, harvest decade and area of origin: the great majority of samples (69.4%, n=34) originate from Bazoș itself, with the remainder (30.6%, n=15) drawn from six other localities across the Banat and Oltenia regions (Caraș-Severin and Mehedinți counties).

• Results — Sensory Observations

Consistency (n = 49)

Observed pattern	Share of samples
Two-phase — crystallized base (≈2/3) + liquid top (≈1/3)	**71.4% (n=35)**
Fully crystallized	**18.4% (n=9)**
Liquid / minimal crystallization	**10.2% (n=5)**
Surface foam layer (additional, not exclusive)	**8.2% (n=4)**

Taste (n = 49)

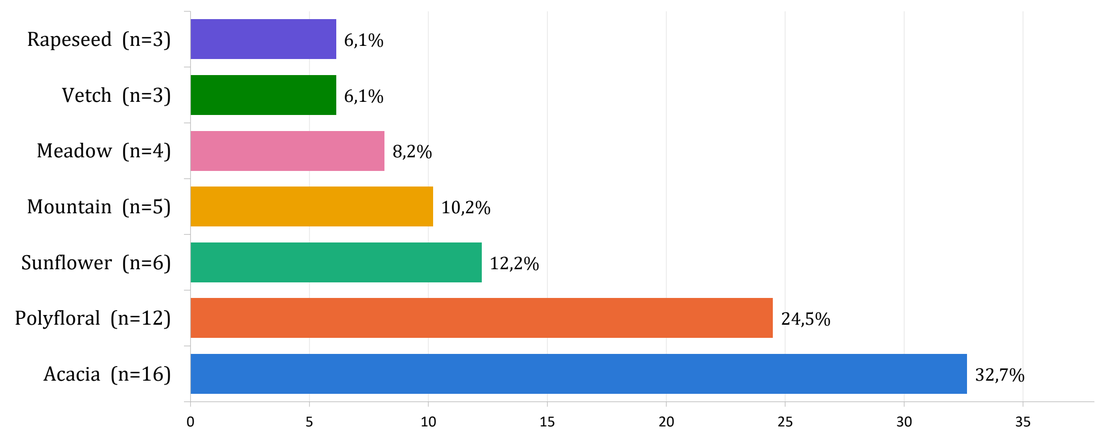
Observed pattern	Share of samples
Typical taste, no off-notes	**73.5% (n=36)**
Acidic taste noted	**26.5% (n=13)**
— of which, metallic aftertaste	**8.2% (n=4)**

Color (n = 49)

Observed pattern	Share of samples
Light	**14.3% (n=7)**
Medium amber	**22.4% (n=11)**
Dark amber	**40.8% (n=20)**
Very dark	**22.4% (n=11)**

Color assessed on a light-to-dark visual scale; most samples present darker color grades.

• Sample Distribution by Botanical Origin (n = 49, seven types)



• Discussion

The two-phase consistency observed in most samples is consistent with the natural crystallization behavior of honey, governed largely by the ratio of glucose to water and by the presence of fine crystallization nuclei: over long storage intervals the denser crystallized glucose tends to settle toward the base of the container, while a thinner, relatively fructose-enriched liquid layer persists above it.

The predominance of darker color grades across the collection is compatible with the gradual non-enzymatic browning typically associated with honey aging, even under otherwise favorable storage conditions. Likewise, the acidic and, in a smaller subset, metallic notes detected during tasting may reflect a slow accumulation of organic acids and subtle interaction with storage-container materials over multi-decade intervals — plausible mechanisms given the timescale involved, which the forthcoming physicochemical analysis will aim to confirm directly rather than infer from sensory observation alone.

• Conclusions

With a storage interval of 57 years and no direct equivalent in the international literature, this collection documents long-term sensory evolution rarely captured elsewhere. Preliminary observations indicate predominantly darker color grades, a common two-phase crystallized/liquid consistency, and a minority acidic-to-metallic taste profile — patterns to be confirmed by the full statistical analysis. Taken together, these findings support the differentiated valorization of apicultural products of documented provenance, and underline the value of long-preserved family collections as a resource for sensory and quality research in apiculture.

• Significance for Apicultural Practice

Collections of this kind are uncommon: few beekeeping families preserve honey across multiple generations under consistent conditions, and fewer still retain samples spanning five decades alongside reliable provenance information. Characterizing how honey’s sensory attributes evolve over such long intervals is directly relevant to beekeepers and producers seeking to document authenticity, to understand the practical shelf life of stored honey, and to differentiate products by both botanical origin and documented storage history — an increasingly important consideration in a market where provenance and traceability are valued by consumers alongside taste and appearance.

Keywords: Sensory analysis, long-term storage, botanical origin, honey.

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