



FROM HIVE TO POLICY: THE SUSTAINABLE BEEKEEPING PRACTICES INDEX (SBPI) AS A DECISION-MAKING TOOL

Manjola Kuliçi¹, Elena Kokthi¹, Fatmir Guri²

¹DEPARTMENT OF FOOD SCIENCE AND BIOTECHNOLOGY, FACULTY OF BIOTECHNOLOGY AND FOOD, AGRICULTURAL UNIVERSITY OF TIRANA, ALBANIA
²DEPARTMENT OF ECONOMICS AND POLICIES OF RURAL DEVELOPMENT, AGRICULTURAL UNIVERSITY OF TIRANA, ALBANIA

1. INTRODUCTION

Beekeeping supports sustainable food systems via pollination, food diversity, and environmental resilience.

Sustainability threats: diseases, poor hive management, environmental stressors.

2. AIM

Develop the SBPI, a composite index to assess and guide sustainable beekeeping practices



3. METHODOLOGY



Data Source: Survey among beekeepers.



Statistical Technique: Principal Component Analysis (PCA).



FIVE SUSTAINABILITY DIMENSIONS:

- 1.Colony Health & Disease Management (38.4%)
- 2.Genetic Diversity & Hive Resilience (15.8%)
- 3.Environmental & Climate Stressors (7.7%)
- 4.Beekeeper Management & Hive
- 5.Maintenance (5.8%)
- 6.Migratory Beekeeping & Production
- 7.Efficiency (5.4%)

4. SBPI FORMULA AND EXAMPLE CALCULATION

$$SBPI=(0.384\times0.75)+(0.158\times0.62)+(0.077\times0.41)+(0.058\times0.38)+(0.054\times-0.25)=0.426$$
$$\text{SBPI} = (0.384 \times 0.75) + (0.158 \times 0.62) + (0.077 \times 0.41) + (0.058 \times 0.38) + (0.054 \times -0.25) = 0.426$$

- 1. MODERATE-TO-HIGH SUSTAINABILITY
- 2. STRONG IN DISEASE CONTROL
- 3. NEEDS IMPROVEMENT IN MIGRATORY AND CLIMATE STRATEGIES

5. RESULTS

SBPI identifies critical intervention areas. Enables personalized sustainability benchmarking

6. POLICY & PRACTICE IMPLICATIONS

- Training in disease monitoring & climate adaptation
- Certification based on SBPI benchmarks
- Policy to regulate migratory practices & promote local queen breeding

7. CONCLUSION

- SBPI is a scalable, replicable tool for assessing and promoting sustainable apiculture.
- Supports evidence-based decision-making in food policy and rural development.