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**Editors: Otilia BOBIȘ, Daniel S. DEZMIREAN**



**6th INTERNATIONAL  
SYMPOSIUM  
ON BEE PRODUCTS AND  
ANNUAL MEETING OF  
INTERNATIONAL  
HONEY COMMISSION**

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## ASSESSING BEEKEEPING POTENTIAL IN A PORTUGUESE AREA WITH HONEY PROTECTED DESIGNATION OF ORIGIN

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**Introduction:** Beekeeping plays an essential role in the sustainable development of rural areas, producing economic, social and environmental benefits. From the socioeconomic point of view, it is an income source to the local communities through the sale of its products and the pollination services provided by honeybees, thus contributing to increase the yield of agricultural crops. On an environmental level, these pollinating insects ensure the regulation of multiple ecosystem services, such as conservation of wild plant species and provision of food.

**Aims:** This study aims to assess the beekeeping potential in a Portuguese area with honey protected designation of origin (PDO) following a multi-criteria decision analysis (MCDA) for

supporting beekeepers in the selection of the best locations for apiaries, thus maximizing honey production and reducing the risk of bee colony losses.

**Materials and Methods:** MCDA techniques combining Geographic Information Systems (GIS) with the Analytical Hierarchy Process (AHP) matrix were applied to a set of criteria that interfere with the beekeeping activity. These criteria were normalized using the fuzzy standardization approach, and then weighted based on pairwise comparisons. Weighted coefficients were aggregated to determine the beekeeping potential.

**Results:** The mapping of beekeeping suitability showed the different nuances of the territory studied, where the lowest values indicate low or no potential. In turn, higher suitability classes are associated to areas with a high abundance of melliferous flora species, distant from urban settlements and public roads, and with water bodies nearby.

**Conclusion:** In view of these results and the GIS-AHP techniques used, the output can help policymakers, associations and beekeepers to outline sustainable practices aimed at improving the beekeeping activity, especially in locations where it is poorly exploited and, thus increase the sector's profitability.

**Keywords:** *Beekeeping, Multi-criteria decision analysis, Spatial planning, Suitability mapping.*

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