PP-236 [Beekeeping Technology and Quality]
Validation of the Organic Beekeeping Sites by the Support of the GIS

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Organic beekeeping is a sustainable and ecological approach to apiculture that prioritizes the health of honeybee colonies by minimizing chemical interventions and supporting natural behaviors. By maintaining ecological balance and promoting biodiversity, organic beekeeping enhances pollinator health, improves honey quality, and contributes to sustainable agriculture. It integrates organic management practices, natural hive designs, and selective breeding for disease resistance.

The European Union's organic regulation defines specific principles for organic beekeeping, including requirements for beekeeping practices, hygiene, bee breeds, disease prevention, and the location of the apiary itself. This research focuses on the latter - apiary location and its validation using Geographic Information System (GIS). According to organic beekeeping regulations, hives must be located within a 3 km radius of organically cultivated plants, wild plants, or non-organically managed crops and forests that are maintained using methods with a low environmental impact.
Manually validating apiary sites can be challenging, making ICT-based solutions highly valuable. This research demonstrates the application of spatial data from the Rural Support Service of Latvia to analyze the areas surrounding actual and potential apiary locations. Agricultural fields can be considered as organic based on specific spatial data parameters within the database.

In this study, a GIS-based system prototype has been developed to visually assess agricultural fields within the honeybee flight range around an apiary. The system identifies organic and non-organic fields and visualizes the potential foraging fields.

The developed approach and system prototype can be beneficial for regional authorities and policymakers responsible for evaluating beekeepers and granting organic certifications. Additionally, beekeepers and consumers can use this system to verify whether an apiary is located in an organic environment, ensuring that bee products meet organic standards.