

**PP-312 [Beekeeping Technology and Quality]
Harnessing Artificial Intelligence for Smarter Beekeeping: Innovations in HiveTracks**

James Wilkes, Max Runzel
HiveTracks

As AI technology rapidly advances and becomes integrated into beekeeping, HiveTracks is at the forefront of incorporating these elements into its platform. Building on over a decade of experience providing global technology solutions for beekeepers, this integration further enhances HiveTracks' ability to optimize hive management and improve decision-making for beekeepers around the world. Three new AI-driven features under development will be presented: plant and pollinator identification, brood image analysis, and customized recommendations.

The AI-powered plant and pollinator identification feature allows beekeepers to identify and document the variety and abundance of pollinators and pollinator-friendly plants in their local environment. This information helps beekeepers ensure their hives have access to diverse and plentiful food sources and validate the nectar sources of their honey. Additionally, the ability to track other pollinators in the area provides valuable insights into the local pollinator dynamics, enabling beekeepers to manage their hives in a way that promotes biodiversity and supports the broader ecosystem.

HiveTracks utilizes AI and advanced image analysis to evaluate bee populations, brood patterns and diseases, and to identify signs of pests or other hive issues. This technology not only standardizes hive health assessments, making data analysis easier and providing guidance for inexperienced beekeepers, but also enables early detection and proactive measures to improve colony health and reduce colony loss.

An AI-powered recommendation engine can provide beekeepers with customized guidance based on hive conditions, local environment, and seasonal changes. This is an improvement on hard-coded recommendation tools that are based on beekeeper assessments, which can be difficult to maintain and lack nuance. AI tools can incorporate multiple, dynamic data sources to provide relevant and actionable advice that optimizes hive management, including suggestions for space, feeding, disease and pest control. While all beekeepers can benefit from this type of advice, it would be especially helpful for inexperienced beekeepers.

HiveTracks' AI-powered tools provide beekeepers with valuable insights and actionable recommendations, promoting sustainable and resilient beekeeping practices. This data-driven decision-making not only supports beekeepers but also contributes to the overall health of the bee population and the environment.