Apimondia News

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Collaboration is the foundation of resilient beekeeping.

During the 2025 World Café on Resilient Beekeeping at Apimondia in Copenhagen, beekeepers, scientists, and other stakeholders gathered to talk about the biggest challenges facing the sector. The discussions focused on three main themes: technology and digital innovation, sustainability and resilience to stressors, and citizen science. One clear message emerged: research matters most when it helps beekeepers in real life, not just in theory.

Practical tools, not abstract solutions

When discussing technology and digital innovation, participants showed a lot of interest in tools that could make beekeeping more efficient, informed, and easier to manage. They mentioned several ways technology could help, such as GPS tracking, hive weight monitoring, pathogen detection, bee traffic counters, acoustic and visual monitoring, queen location, pollen load checks, residue sensing, and automated detection of *Varroa destructor* and *Vespa velutina*. There was also interest in better digital record-keeping, environmental monitoring, and tools to help assess honey quality and nutrition.

Participants also stressed that new tools need to be truly practical in the field for people to be excited about them. They mentioned several barriers, such as high costs, systems that do not work together, technical challenges, and poor internet in remote apiaries. Many preferred integrated, multifunctional systems over single devices that do not connect well. AI got mixed reviews: people liked it for teaching and data analysis but did not trust it for making decisions on its own because of worries about mistakes and lack of context. In short, digital tools should be affordable, reliable, work well together, and be developed with beekeepers so they help, not complicate, daily work.

Climate, pests and changing conditions

The conversation about sustainability and resilience looked at how climate change, pests, diseases, and changing forage conditions all affect beekeeping. Participants from different countries said climate change is already having an impact, with longer and less predictable seasons, changes in flowering times, less reliable forage, drought, flooding, wildfires, and shifts in crop patterns. Many said these changes make it harder to manage colonies and prepare for winter.

A big concern was how changing seasons are affecting bee colonies. Participants pointed out that brood rearing now extends into winter, which makes pest control harder. This is especially important for Varroa, which most saw as the main threat to colony health. They also noticed that some treatments are less effective and said there is a need for better, more practical Varroa management. There was also growing worry about *Tropilaelaps* mites, *Vespa* species, and diseases like *Nosema*.

The group also talked about what kind of support beekeepers need. They asked for early, hands-on training for new beekeepers and more research on how hives regulate temperature and how plastic hive materials might affect bees. Many were frustrated that research often finds the right problems but does not give clear, useful advice after the projects finish.

Why participation and communication matter

The citizen science discussion looked at how research projects can work better with beekeepers by involving them more directly. The report showed that beekeepers are eager to take part in research, both out of curiosity and for practical reasons. They wanted chances to learn, get data about their own colonies, build networks, help set research priorities, and receive results that are easy to use.

However, this willingness had some conditions. Participants were frustrated by unclear project goals, not enough explanation of methods, complicated scientific language, slow analysis, poor communication of results, and not enough recognition for their time and effort. Many also felt that collaboration ended too quickly when projects finished. The group agreed there is a need for clear language, easy-to-use tools, regular feedback, and longer-term partnerships that treat beekeepers as partners, not just data collectors.

James Williams, social scientist at **Aarhus University, Denmark**, facilitated one themed session. He emphasised that research is most useful when beekeepers are involved from the start and findings are communicated clearly and simply.

“From our World Café discussions, we learned that research is most useful when beekeepers are involved early, and findings are communicated simply.”

Williams said participants wanted simple methods, regular feedback, and tools made with beekeepers, not just handed to them. He believes that working together with beekeepers makes research feel more real and helps turn scientific results into practical advice that supports real decisions in the apiary. He also highlighted why social science matters in EU bee projects:

"As a social scientist, I believe our work helps ensure research truly reflects beekeepers' needs, because we look not only at bees and biology but at the people who care for them within complex social and ecological systems."

Williams explained that meaningful participation depends on motivation, trust, expectations, and daily realities. By helping make sense of these dynamics, social scientists can explain that real participation depends on motivation, trust, expectations, and daily life. By understanding these factors, social scientists can help create more inclusive engagement, stronger teamwork, and better shared learning. They can also help research teams turn scientific work into practical knowledge that truly connects science with everyday beekeeping, science, and practice to deliver clear, practicable and usable outputs."

The main takeaway

All three themes led to the same conclusion. Beekeepers' welcome innovation, research, and working together, but only if it is practical, affordable, clearly explained, and fits real life in the apiary. Climate change and pests are still the main threats to colony health. Digital tools should support, not replace, beekeeper skills, and future projects should focus more on usability, trust, feedback, and long-term involvement.

The key lesson from the World Café is that research needs to do more than just get published. It should give beekeepers clear advice they can use, help them feel more confident in making decisions, and offer real support for keeping colonies healthy now and in the future.

Join the conversation

The World Café started some valuable conversations, but many important questions are still open. As the discussion goes on, we encourage you to think about three key questions:

- **How can projects value participant contributions beyond just collecting data?**
- **What emerging stressor do you think is still underestimated by the wider community?**
- **Why is Varroa still the dominant concern, despite decades of research?**

In the end, thinking about these questions can help shape the spirit of collaboration that is essential for resilient beekeeping in the future. You can read the full and more detailed results in **written format** here and **presentation format** here

Contact details: Apimondia Communications: media@apimondia.org or press@apimondia.org