Beyond the Hive: A Scoping Review of Beekeepers' Motivations Informing Research and Industry Collaboration

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Introduction

The purpose of this research study was to summarize the evidence on the driving forces and underlying factors that motivate beekeepers to enter the beekeeping industry. Beekeepers globally face many challenges impacting hive sustainability and barriers to entering the industry (Guerin et al., 2025; Wakgari & Yigezu, 2021). Motivating factors can shift beekeepers' management practices and influence their decision-making (Kahane et al., 2022). Further, understanding beekeepers' motivations is critical to informing management, policy, and advocacy strategies for this population (Feketéné Ferenczi et al., 2024). Results from this study can be used to inform similar outreach and engagement strategies when working with producers and industry populations. The research question guiding this study was: What factors motivate beekeepers to engage in beekeeping and sustain hive management?

Theoretical Framework

To investigate our research question through the lens of a theoretical framework, we utilized Cognitive Evaluation Theory (CET), one of the six sub-theories of Self-Determination Theory (SDT) (Ryan & Deci, 2022). SDT (Deci & Ryan, 1985) has been highly regarded throughout various disciplines including health, education, and agriculture. SDT explains human motivation and satisfaction through three main components (autonomy, competence, and relatedness) and shows how intrinsic and extrinsic motivations can be influenced by outside factors (Ryan & Deci, 2022; Payne et al., 2019). Specifically, CET is an extension of SDT that focuses solely on intrinsic motivation and the influence of environmental, social, and intrapersonal contexts (Ryan & Deci, 2022). We implemented CET due to the nature of our study which focused primarily on beekeepers' intrinsic motivations toward beekeeping.

Methodology

A scoping review was conducted to synthesize relevant research surrounding beekeeper motivations. Scoping reviews are advanced literature reviews resulting in a less biased, comprehensive, and exhaustive set of results (Koutsos et al., 2019). Our review followed a strict procedure using a PEO framework (Frandsen et al., 2020) beginning with identifying key terminologies to conduct the search (Bearman et al., 2012). We searched three databases (Web of Science, Agricola, and CAB Abstracts) using keywords such as "motivate", "adopt", "beekeep", "interest", "bee", "passion", "honey producer", "apiculture", "values", and more.

Following the search, we utilized Covidence, an online systematic review tool, to aid in organizing and sifting through the literature. Within Covidence, we completed both title and abstract and full-text screenings to narrow the search based on inclusion and exclusion criteria determined by the researchers and the established PEO framework (Koutsos et al., 2019). Inclusion criteria were studies in English, from any country, which were focused on beekeeping/beekeepers' motivations, preferences, perceptions, trust, or decision making. To review grey literature, researchers also reviewed references in the included studies for additional sources and beekeeping-specific outlets such as the *American Bee Journal*. To confirm inter-rater reliability during the review process, two coders independently reviewed articles during the full-text stage and then assessed discrepancies together. During the coding process, both coders split responsibilities evenly and verified each other's codes. To further analyze the reviewed literature, we used descriptive statistics.

Results

A total of 5,912 records retrieved from the database search were uploaded into Covidence. After de-duplication, 4,031 records were reviewed during the title and abstract screening stage. We identified 41 studies eligible for full-text assessment after this screening. This was reduced to 20 upon assessing the articles with inclusion/exclusion criteria during the full-text review. Next, researchers coded the included studies for 10+ variables. Notable variables extracted from the included articles included Country, Motivations, Year, and Journal. Preliminary descriptives from the 20 included studies ranged in date from 2006 to 2024, with most studies published between 2021 (n = 6, 30%) and 2022 (n = 5, 25%). Sources represented 15 various journals such as the *Journal of Apicultural Research*, *Agriculture, Insects*, *Agriculture & Food Security*, and more. Studies included both qualitative and quantitative data from over 15 countries: Australia (n = 3), Brazil (n = 1), Croatia (n = 1), Ethiopia (n = 3), Ghana (n = 2), Hungary (n = 1), India (n = 2), Indonesia (n = 1), Italy (n =1), Kenya (n = 1), New Zealand (n = 3), Romania (n = 1), United Kingdom (n = 2), United States of America (n = 1). Additionally, beekeepers across the studies were motivated to keep bees for various reasons, identified by the researchers through 12 codes: Financial, Livelihood and Security, Leisure, Ecological/Environmental, Resource Diversification, Cultural or Generational, Product Sourcing, Human Capital, Community Contribution, Lifestyle/Wellbeing, Esthetic, or due to the Beekeeper-Bee Relationship. The themes most represented among the studied literature were Financial (19%), Livelihood and Security (14%), Cultural or Generational (13%), Leisure (12%), Ecological/Environmental (9%), and Lifestyle/Wellbeing (9%).

Conclusions, Implications, and Recommendations

Our study spanned many nations, illustrating that motivations for beekeeping are consistent across cultures, climates, and other factors. Among least developed countries, developing countries, and developed countries, beekeepers are motivated and driven to advance the industry, whether for financial, personal, or ecological reasons, depending on one's circumstances and needs. In the context of CET, we aggregated the 12 motivation codes into more encompassing categories: Livelihood Motivations, Ecological Motivations, Social and Cultural Motivations, and Personal Investment Motivations.

The results of our scoping review indicate that understanding beekeeper motivations has become a growing area of study, as more than half of the included studies in our search were published in the last five years. Today, beekeepers and bee colonies encounter detrimental challenges between pests and diseases, failure in queen mating, market barriers, and more (Vercelli et al., 2021). Given these extreme challenges for the industry, now more than ever, researchers and practitioners must understand producers' motivations to enhance the succession of beekeeping. Echoed by included studies, we report that by understanding beekeeper motivations, researchers, policymakers, and beekeeping organizations can develop "widely accepted strategies for maintaining honey bee populations and wild pollinators" (Feketéné Ferenczi, 2024, p. 1, as cited in Kahane et al., 2022). Likewise, strategies should include more participatory approaches within policy and extension to account for beekeepers' intrinsic motivations, thereby mitigating and addressing challenges collectively (Landaverde et al., 2023). This study provides an important overview of motivations for beekeeping to inform current knowledge and identify gaps for environmentalists, agricultural researchers, social science researchers, and educators partnering with industry producers. We recommend that partnering researchers conduct high-level literature reviews to thoroughly understand relevant studies concerning collaborative industry populations.

References

Bearman, M., Smith, C. D., Carbone, A., Slade, S., Baik, C., Hughes-Warrington, M., & Neumann, D. L. (2012). Systematic review methodology in higher education. *Higher Education Research & Development*, *31*(5), 625–640. https://doi.org/10.1080/07294360.2012.702735

Deci, E. L., and Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Feketéné Ferenczi, A., Szűcs, I., & Bauerné Gáthy, A. (2024). "What's good for the bees will be good for us! "—A qualitative study of the factors influencing beekeeping activity. *Agriculture*, *14*(6), 890. https://doi.org/10.3390/agriculture14060890

Frandsen, T. F., Bruun Nielsen, M. F., Lindhardt, C. L., & Eriksen, M. B. (2020). Using the full PICO model as a search tool for systematic reviews resulted in lower recall for some PICO elements. *Journal of Clinical Epidemiology*, *127*, 69–75. https://doi.org/10.1016/j.jclinepi.2020.07.005

Guerin, E., Chheang, C., Sinpoo, C., Attasopa, K., Noirungsee, N., Zheng, H., Ling, T. C., Phokasem, P., & Disayathanoowat, T. (2025). Current status, challenges, and perspectives in the conservation of native honeybees and beekeeping in Cambodia. *Insects*, *16*(1), 39. https://doi.org/10.3390/insects16010039

Kahane, F., Osborne, J., Crowley, S., & Shaw, R. (2022). Motivations underpinning honeybee management practices: A Q methodology study with UK beekeepers. *Ambio*, *51*(10), 2155–2168. https://doi.org/10.1007/s13280-022-01736-w

Koutsos, T. M., Menexes, G. C., & Dordas, C. A. (2019). An efficient framework for conducting systematic literature reviews in agricultural sciences. *Science of The Total Environment*, *682*, 106–117. https://doi.org/10.1016/j.scitotenv.2019.04.354

Landaverde, R., Rodriguez, M. T., & Parrella, J. A. (2023). Honey production and climate change: Beekeepers' perceptions, farm adaptation strategies, and information needs. *Insects*, *14*(6), 493. https://doi.org/10.3390/insects14060493

Payne, S. M., Nicholas-Davies, P., & Home, R. (2019). Harnessing implementation science and self-determination theory in participatory research to advance global legume productivity. *Frontiers in Sustainable Food Systems*, *3*, 62. https://doi.org/10.3389/fsufs.2019.00062

Ryan, R. M., & Deci, E. L. (2022). Self-determination theory. In *Encyclopedia of Quality of Life and Well-Being Research* (pp. 1–7). Springer, Cham. https://doi.org/10.1007/978-3-319-69909-7_2630-2

Vercelli, M., Novelli, S., Ferrazzi, P., Lentini, G., & Ferracini, C. (2021). A qualitative analysis of beekeepers' perceptions and farm management adaptations to the impact of climate change on honey bees. *Insects*, *12*(3), 228. https://doi.org/10.3390/insects12030228

Wakgari, M., & Yigezu, G. (2021). Honeybee keeping constraints and future prospects. *Cogent Food & Agriculture*, *7*(1), 1872192. https://doi.org/10.1080/23311932.2021.1872192