



UNIVERSITY OF LIFE SCIENCES
"KING MIHAI I" FROM Timisoara
**Multidisciplinary Conference on
Sustainable Development**



30-31 May 2024

BIBLIOGRAPHIC STUDY ON THE INTERACTION BETWEEN ELECTROMAGNETIC FIELDS AND BEES: THE IMPACT ON BEHAVIOUR, HEALTH AND THE ECOSYSTEM

Vasilică SAVU¹, Agripina ŞAPCALIU¹, Viorel FĂTU²

¹Research Station for Sericulture Baneasa, 013685, 69 Bucuresti-Ploiesti, Romania

²Research and Development Institute for Plant Protection, 013813, 6 Ion Ionescu de la Brad Blv., Bucharest, România

Abstract: *The interaction between electromagnetic radiation generated by current technologies (mobile phones and 4G/5G wireless antennas) and bees is an ongoing research topic with wider ecological and environmental implications, as bees play a crucial role in pollination and maintaining ecosystems. Since the interaction between bees and electromagnetic radiation is a complex and multifactorial issue, studies are needed in Romania to better understand the connection between non-ionizing electromagnetic radiation and bees. The aim of this paper was to highlight the importance and relevance of the impact of non-ionizing electromagnetic radiation on bees, in order to understand the potential threats to their health and the ecosystem. In order to explore the impact of electromagnetic radiation on bees, we considered publications accessible in the published scientific databases (2007-2024). Data were collected from more than 100 publications and finally 83 studies were considered, from which 76 studies were finally selected. The authors emphasized the negative effect on bees exposed to non-ionizing electromagnetic radiation (changes in flight behavior, disorientation, inability to identify the food source), emphasizing the relationship between the practical consequences of exposure to electromagnetic radiation and the decline of bee populations (CCD).*

• Introduction

Since the introduction of electrification in the late 1800s and wireless communications in the 1930s, ambient radiation levels from devices, broadcast facilities, terrestrial telecommunications infrastructure, satellites, and military applications have gradually increased over a range of frequencies in the non-ionizing bands of the electromagnetic spectrum.

• Material and method

To explore the impact of electromagnetic radiation on bees, we considered publications accessible in the published scientific databases (2007-2024) Elsevier, MDPI, PubMed, Web of Science, Research Gate, Springer and Wiley Online Library. To search for articles on this topic, we used the following keywords: impact on bees, behavior, environment, electromagnetic radiation, electromagnetic frequencies, biodiversity.



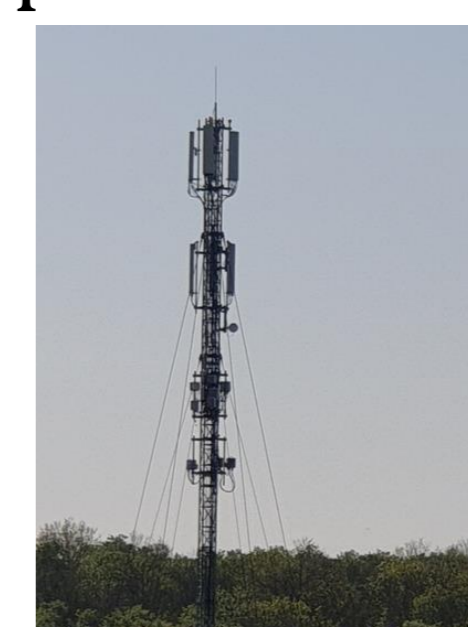
• Results and discussions

There is no information on the current situation regarding the impact of electromagnetic radiation on bees in Romania at the national level, research is needed to monitor the impact of different sources of electrical and electromagnetic radiation, including 4G and 5G networks, on bees and other pollinators, because they play a role important in maintaining biodiversity in the ecosystem, but also in food production and maintaining food security.

• Conclusions

Many countries, including the European Union, have taken steps to monitor the development of 5G technology and its potential effects on the environment, including pollinators. In response to these concerns, some countries have implemented measures to protect bees and other pollinators, such as restrictions on the use of pesticides and the creation of protected habitats.

There has also been increased investment in research to better understand the effects of electromagnetic radiation on bees and other pollinators and to develop strategies to mitigate these impacts. Some states have also implemented guidelines and regulations to minimize potential risks to pollinators and other wildlife.



Acknowledgement: This research was supported by the Ministry of Agriculture and Rural Development through the ADER Program within the projects ADER 2.1.8./2023.