

BOOK OF ABSTRACTS

Conference materials from 4th the conference

"MycoRiseUp! Youth in Mycology"

20-21 MAY 2023 Institute of Agrophysics Polish Academy of Sciences in Lublin

PATRONAT HONOROWY



PREZYDENT MIASTA LUBLIN KRZYSZTOF ŻUK









Conference Organizers:

Institute of Agrophysics, Polish Academy of Sciences Polish Mycological Society Maria Curie-Skłodowska University in Lublin Sekcja Biotechnologia Grzybów Polskiego Towarzystwa Mykologicznego

Organizing committee:

Dominika Siegieda Mateusz Mącik Michał Pylak Wiktoria Maj Klaudia Szpilska Sylwia Stefanek Wiktoria Piątek-Gołda Sebastian Piskorski

Cover design, typesetting and editing:

Michał Pylak

Only copy-editing and formatting of abstracts have been done, therefore the authors are fully responsible for the scientific content of their abstracts.

ISBN: 978-83-89969-78-1

Copyright ©2023 by Institute of Agrophysics, Polish Academy of Sciences Open Access, Creative Commons Licence CC BY-NC-ND version edited with publication

Beneath the apple tree: exploring the biodiversity of fungal communities in soil under *Malus domestica* trees

Michał Pylak, Karolina Oszust, Jacek Panek, Klaudia Szpilska, Magdalena Frąc

Instytut Agrofizyki im. Bohdana Dobrzańskiego Polskiej Akademii Nauk, ul. Doświadczalna 4, 20-290 Lublin

k.oszust@ipan.lublin.pl

Key words: apple trees, biodiversity, soil treatments

The fungal biodiversity of soil can be greatly affected by the soil treatment and the plants present. This type of research needs to be conducted because understanding the complex relationships between plant species and soil microbial communities is critical for developing sustainable agricultural practices that promote soil health and biodiversity (Ponisio i in., 2015). Proper soil health ensures proper functioning of the environment e.g. bioavailability of micronutrients and organic matter decomposition (Tal, 2018).

Soil samples were collected from under the apple trees growing in different types of cultivated land such as bound, forest, cultivated and uncultivated orchards, gardens and gardens with animals. These represent the most common types of soil under the apple trees. DNA was isolated and subjected to next-generation sequencing (NGS). Based on this analysis alpha and beta diversity measures were calculated. The results show that different types of land cultivation significantly influence the fungal microorganisms composition in the soil.

In conclusion, this research highlights the importance of studying the biodiversity of soil fungal communities in apple orchards and beyond. By examining the effects of soil treatments on fungal diversity, this study provides a basis for developing sustainable agricultural practices that support soil health and promote biodiversity conservation.

Work financed by the National Center for Research and Development as part of the LIDER XII project, contract number LIDER/7/0054/L-12/20/NCBR/2021

Bibliography:

- 1. Ponisio, L.C. *i in*. (2015) "Diversification practices reduce organic to conventional yield gap", *Proceedings of the Royal Society B: Biological Sciences*, 282(1799), https://doi.org/10.1098/rspb.2014.1396.
- 2. Tal, A. (2018) "Making conventional agriculture environmentally friendly: Moving beyond the glorification of organic agriculture and the demonization of conventional agriculture", *Sustainability (Switzerland)*, 10(4), https://doi.org/10.3390/su10041078.