



Contribution ID: 3

Type: **oral presentation**

LONG-TERM STUDY OF FIELD ECOSYSTEMS IN PRIEKUĻI

Agricultural-induced environmental changes influence a wide range of ecosystem services, including biodiversity and habitat dynamics (Dale & Polasky, 2007). Field ecosystems, as human-modified agroecosystems dominated by cultivated crops, are largely shaped by agricultural practices. Their structure and functioning are determined by species diversity, ecological processes, and interactions between biotic and abiotic factors (Power et al., 2009).

Weeds are an integral component of field ecosystems, competing with crops for nutrients, water, and light, which directly impacts productivity. Long-term agricultural management can lead to the development of distinct weed communities, shaped by the prevailing cultivation and weed control practices (Horvath et al., 2023).

The diversity of weed species over extended periods reflects the cumulative effects of soil management practices, fertilization strategies, and crop rotation systems. Changes in weed flora composition can indicate shifts in soil fertility, disturbance regimes, and competitive interactions within agroecosystems. Over decades, certain weed species may become dominant due to repeated cultivation techniques, while others may decline as a result of targeted weed control measures or alterations in nutrient availability. Understanding these dynamics provides valuable insights into the sustainability of different farming systems and their influence on weed suppression, biodiversity conservation, and overall agroecosystem stability.

Weed dynamics were also studied during the long-term stationary experiment on crop rotation fertilization systems at the Priekuļi Research Center of the Institute of Agricultural Resources and Economics from 1958 to 2006. The findings confirmed that weeds serve as reliable indicators for assessing the effectiveness of applied agronomic practices (farming systems). The long-term diversity of weed species changed markedly.

Izmantotā literatūra:

Dale, V.H., Polasky, S. (2007). Measures of the effects of agricultural practices on ecosystem services. *Ecological Economics*, doi:10.1016/j.ecolecon.2007.05.009

Horvath, D.P., Clay, S.A., Clarence J. Swanton, James V. Anderson, Wun S. Chao, (2023). Weed-induced crop yield loss: a new paradigm and new challenges, *Trends in Plant Science*, Volume 28, Issue 5, Pages 567-582, ISSN 1360-1385, <https://doi.org/10.1016/j.tplants.2022.12.014>.

Power, A.G., O'Rourke, M. and Drinkwater, L.E. "VI.4 Human-Dominated Systems: Agroecosystems". *The Princeton Guide to Ecology*, edited by Simon A. Levin, Stephen R. Carpenter, H. Charles J. Godfray, Ann P. Kinzig, Michel Loreau, Jonathan B. Losos, Brian Walker and David S. Wilcove, Princeton: Princeton University Press, 2009, pp. 597-605. <https://doi.org/10.1515/9781400833023.597>

Primary author: ZARINA, Livija

Presenter: ZARINA, Livija