Assessment of phytodiversity in organic agricultural landscape of central Ukraine

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Background

Biotopes of agricultural landscapes such as ecotones, forest shelter belts (FSB) and fields are marginal habitats of biota in the agricultural landscape. They are especially important in areas where the intensification of agricultural practices reduces the ecological quality of the landscape that leads to homogenization and expansion of alien species. The role of such biotopes is to support biodiversity, help maintain the sustainability of surrounding agro-ecosystems and provide them with important ecosystem services. For better management of agricultural landscapes and preservation of biota habitats, studies of population dynamics and assessment of negative impact factors are necessary.

Figure 1. Study area in the organic landscape: demonstration site of Institute of Agroecology and Environmental Management of NAAS of Ukraine

Study Aim

The purpose of this study is an assessment of vegetation diversity in biotopes of the organic agricultural landscape according to the gradient of anthropogenic influence from the most intense to the least: fields - ecotones - field protective forest shelter belts.

Table 1. Indicators of vegetation taxa of the studied biotopes - fields, ecotones, forest shelter belts

Indicators	Fields	Ecotones	FSB
Number of plots, pcs	6	14	4
Number of families, pcs	25	32	50
Number of genera, pcs	44	78	92
Number of species, pcs	52	80	113
Shannon Diversity Index	2.49	4.28	6.85

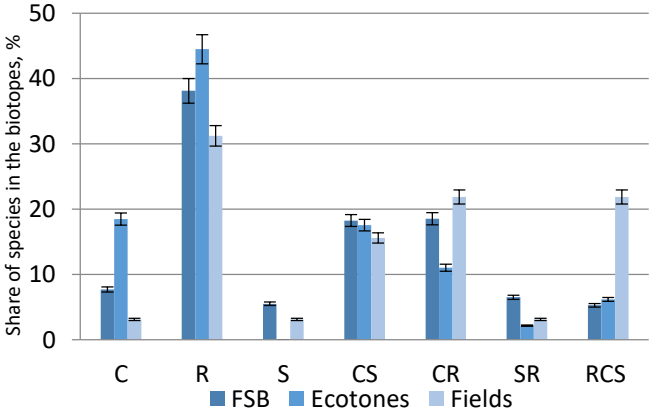


Figure 2. Distribution of plant species by types of ecological strategies

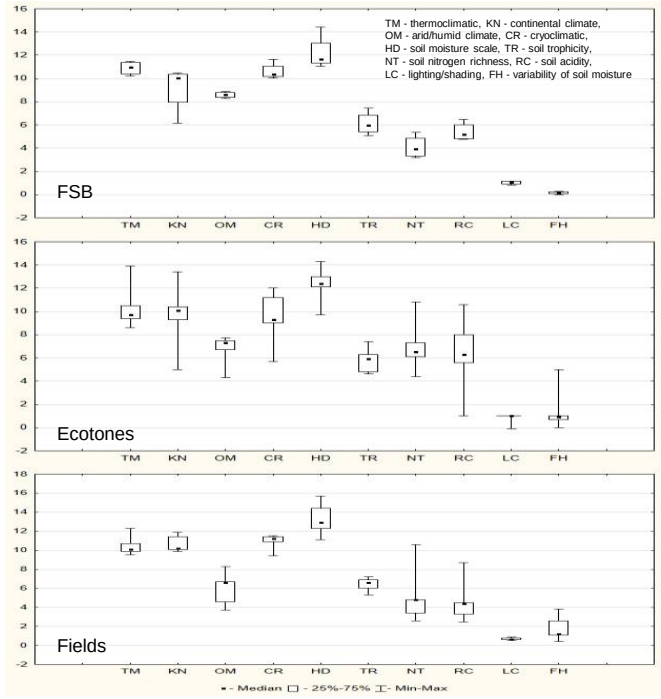
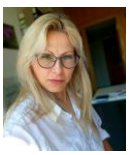


Figure 3. Ecological characteristics of the biotopes

Conclusion

128 species of higher plants were found in the organic landscape (2019-2021). Phytocenoses that formed in the FSB are the richest in plant species. In all biotopes the most abundant species are those with the primary R strategy. Shannon Index shows biodiversity decrease from FSB through ecotones to fields. The high biodiversity rate in ecotones and the highest in FSB indicate the ability of these habitats to perform biodiversity preservation ecosystem services.



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