

Abstract

The aim of this study was to find relationship between present vegetation, past land use and soil conditions of calcareous grasslands in České Středohoří.

Twenty localities, coupled into pairs according to their abiotic attributes (e.g. slope, bedrock, potential direct irradiation) and differing in past land use were chosen. Differences in composition of plant community between these two types of localities were found in previous study (Chýlová, T. (2005): Effect of past land use on distribution of plant species of present dry grassland. Master thesis, Dept. Of Botany, Faculty of Science, Charles University, Prague [Ms., in Czech]). Fifty years ago, ten of them were grazed, the others were arable fields. Nowadays, vegetation of localities belongs to Bromion erecti alliance.

Five soil samples per locality were taken. Per sample content of available phosphorus, total nitrogen, pH, water holding capacity together with ability to form mycorrhizal symbioses were estimated.

It was concluded that soils from the former pastures had significantly higher water holding capacity than the former fields ones.

Using multivariate analysis (RDA – redundancy analysis), significant relationship between plant community composition and the volume of the soil capillary pores was shown. This relationship was evident even after the past land use type was filtered out, although the most correlated species were not the same.

This suggests that ability of water retention, expressed as volume of capillary pores, could be the underlying factor for mysterious species – past land use relationship at least for some of the species.

There was no clear pattern revealed between other measured parameters, plant community and past land use. As shown with tests power analysis, there was only a slight chance to do so, probably because of high inner variability of localities.

These estimations could be use in further study.