

Abstract

The main aim of the thesis was to describe the succession of several abandoned fields under ploughing and discuss ploughing as a possible management for establishing and maintaining species-rich communities of fallows. Actual vegetation, its development over time and soil seed bank were studied.

Experimental small-area ploughing was established at five abandoned fields in the southeastern part of the Podyjí National Park. Three strips with different types of management were founded: A) strip ploughed each year, B) strip ploughed once at the beginning of the experiment, C) control meadow without intervention. Vegetation development was evaluated through a series of relèves recorded during the years 2009–2012. The species composition of the seed bank was described using the seedling-emergence method and subsequent elutriation of soil samples. Similarity indexes, Longevity index (LI) and concept of RCS strategies were used.

The vegetation of each-year plowed sites (A) consisted mostly of annual weeds and ruderal species with R-strategy and high LI. Grassland vegetation (C) consisted mostly of grasses and perennial herbs with C-strategy and lower LI. The vegetation of older fallows (B) was at first most similar to one-year fallow (A), but during the 4 years of succession has moved closer to the meadow (C). In the course of succession decrease of the value of LI and importance of R-strategy and the increase of importance of S-strategy was proven. The soil seed bank of meadow (C) differed from the fallows in the: number of species, number of individuals, species composition and LI value. The distribution of RCS strategies was similar through all management types. Similarity of vegetation and seed bank was the highest at the each-year plowed sites and during the succession decreased significantly. Several invasive species were found on the localities, but only in a small extent. No significant spread outside of the studied area was observed. Some endangered species, that thrived there, appeared too.

These results show that small-scale plowing of abandoned fields can be used as appropriate management in creation of interesting habitats and serve to enhance biodiversity and landscape heterogeneity.

Keywords: abandoned fields, fallows, small-area management, soil seed bank, ploughing, secondary succession