

The effect of native and introduced biofuel crops on the composition of soil biota communities

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Biofuel crops are an accepted alternative to fossil fuels, but little is known about the ecological impact of their production. The aim of this contribution is to study the effect of native (*Salix viminalis* and *Phalaris arundinacea*) and introduced (*Helianthus tuberosus*, *Reynoutria sachalinensis* and *Silphium perfoliatum*) biofuel crop plantations on the soil biota in comparison with cultural meadow vegetation used as control. The study was performed as part of a split plot field experiment of the Crop Research Institute in the city of Chomutov (Czech Republic). The composition of the soil meso- and macrofauna community, composition of the cultivable fraction of the soil fungal community, cellulose decomposition (using litter bags), microbial biomass, basal soil respiration and PLFA composition (incl. F/B ratio) were studied in each site. The C:N ratio and content of polyphenols differed among plant species, but these results could not be considered significant between introduced and native plant species. Abundance of the soil meso- and macrofauna was higher in field sites planted with *S. viminalis* and *P. arundinacea* than those planted with *S. perfoliatum*, *H. tuberosus* and *R. sachalinensis*. RDA and Monte Carlo Permutation Test showed that the composition of the faunal community differed significantly between various native and introduced plants. Significantly different basal soil respiration was found in sites planted with various energy crops; however, this difference was not significant between native and introduced species. Microbial biomass carbon and cellulose decomposition did not exhibit any statistical differences among the biofuel crops. The largest statistically significant difference we found was in the content of actinobacterial and bacterial (bacteria, G+ bacteria and G- bacteria) PLFA in sites overgrown by *P. arundinacea* compared to introduced as well as native biofuel crops. In conclusion, certain parameters significantly differ between various native and introduced species of biofuel crops; however, the functional importance of these differences requires further research.