



## **Allelopathic effect of new introduced biofuel crops on the soil biota: A comparative study**

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Biofuel crops as an alternative to fossil fuels are a component of the energy mix in many countries. Many of them are introduced plants, so they pose a serious threat of biological invasions. Production of allelopathic compounds can increase invasion success by limiting co-occurring species in the invaded environment (novel weapons hypothesis). In this study, we focused on plant chemistry and production of allelopathic compounds by biofuel crops (hybrid sorrel *Rumex tianschanicus* x *Rumex patientia* and miscanthus *Miscanthus sinensis*) in comparison with invasive knotweed (*Fallopia sachalinensis*) and cultural meadow species. First, we tested the impact of leachates isolated from hybrid sorrel, miscanthus, knotweed and cultural meadow species compared to deionized water, used as a control, on seed germination of mustard (*Sinapis arvensis*) and wheat (*Triticum aestivum*) cultivated on sand and soil. Secondly, we studied the effect of leachates on the growth of soil fungal pathogens *Fusarium culmorum*, *Rhizoctonia solani*, *Sclerotinia solani* and *Cochliobolus sativus*. Finally, we tested the effect of litter of hybrid sorrel, miscanthus, knotweed and cultural meadow litter mixed with soil on population growth of *Enchytraeus crypticus* and *Folsomia candida*. Miscanthus and knotweed litter had a higher C:N ratio than the control meadow and hybrid sorrel litter. Miscanthus and hybrid sorrel litter had a higher content of phenols than knotweed and cultural meadow litter. Leachates from hybrid sorrel, miscanthus and knotweed biomass significantly decreased seed germination of wheat and mustard in both substrates. Soil fungal pathogens grew less vigorously on agar enriched by leachates from both biofuel crops than on agar enriched by knotweed and leachates. Litter from hybrid sorrel, miscanthus and knotweed significantly altered (both ways) the population growth of the soil mesofauna.