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Working title: Between competition and benefits: The influence of regenerative agriculture on weed communities


Fotos: W. Holzner

Problem, background, and objective	In agriculture, weeds are predominantly regarded as problematic competitors and are therefore often removed through mechanical weeding, tillage and/or herbicides. In recent years, however, approaches of regenerative agriculture — such as cover cropping, diverse crop rotations with cover crops, reduced tillage, wide row spacing, and adapted micronutrient fertilization — have gained importance, as they can promote long-term soil fertility, biodiversity, and resilience in times of climate change. These measures also influence the composition and dynamics of weed communities; however, potential positive effects have so far been poorly studied. The aim of this thesis is to investigate the influence of selected regenerative agriculture practices on weed communities and their densities. Furthermore, functional traits of dominant weed species will be assessed in order to evaluate to what extent these plants, beyond their potential competitive effects on crops, may also fulfil positive functions (ecosystem services such as supporting nutrient cycling, promoting pollinators, etc.).
Material and methods	On several farms in Lower Austria (Weinviertel), fields with and without regenerative agriculture practices will be investigated to collect data on the following parameters: (1) cover and species composition of weeds (2) functional plant traits of selected dominant weed species (leaf area, plant height, biomass, root diameter, etc.) (3) soil parameters and nutrient supply Depending on the selected crop, data are collected in spring and summer or in autumn and spring. Soil and root parameters are analysed in the laboratory at the Institute of Crop Science and statistically evaluated using the software R.
Starting date	Field work starting in April (summer crops) or in autumn (winter crops)
Requirements	Interest for botany, weeds, plant production and basic knowledge on statistics (R)
Supervision	DI Dr. Silvia Winter (silvia.winter@boku.ac.at), Priv.-Doz. Dr. Gernot Bodner und Ingmar Prohaska (Humusbewegung)