The importance of novel energy crops and cropping systems for farmland biodiversity

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There are no generalities about the impact of energy crop cultivation on biodiversity in agriculture, neither on the field nor on the regional scale. Detrimental impacts of bioenergy development on biodiversity are expected or reported when extensive commercial production of bioenergy feedstock is resulting in land-use change, particularly with regard to conversion of natural habitats, high nature value farmland or other priority habitats of nature conservation to energy crops. Concurrently, there are expectations that energy crops could sustain or even boost biodiversity in agriculture, if those crops would lead to an improvement of habitat heterogeneity or result in reduced agrochemical inputs.

We will present findings from our research on the importance of alternative energy crops, the cup plant Silphium perfoliatum L. in particular, as well as of innovative cropping systems such as alley-cropping of short rotation coppice trees, for biodiversity and ecosystem services in agricultural landscapes. We will also highlight the importance of coordinated land use or strategic land-use planning for developing energy crops in agriculture if biodiversity and ecosystem services should be enhanced by novel crops and cropping systems.