Integrating biodiversity services in agriculture

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Abstract

Under the current scenario of rapid human population increase, combining efficient and productive agricultural land use with conserving biodiversity is a global challenge. A major argument for wildlife friendly farming and agroecological intensification is that crucial ecosystem services are provided by the "planned" and "associated" biodiversity. Loss of biological control can result in dramatic increases of pest densities, pollinator services affect a third of global human food supply, and inappropriate agricultural management can lead to environmental degradation. Hence, the true value of functional biodiversity on the farm is often inadequately acknowledged or understood, while conventional intensification tends to disrupt beneficial functions of biodiversity. Even during the last decades, high percentages of populations and species have gone extinct in human-dominated landscapes.
This presentation is subdivided in three parts: Local management of biodiversity services, landscape design, combining land sharing with land sparing, and at a global scale, adapted solutions for smallholders. Negative externalities of pesticide use, nitrogen losses as well as disappearing pollination, biocontrol and cultural services are discussed. Landscape structure is a key factor of local ecosystem processes, so we need to better understand how to design the configurational and compositional landscape heterogeneity. At a global scale, agriculture practiced under smallholder dominated landscapes, and not large-scale farming, is the backbone of global food security. In conclusion, linking agricultural intensification with biodiversity conservation and hunger reduction requires well-informed regional solutions at different spatial scales.

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