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Soil community composition and ecosystem processes: Comparing agricultural ecosystems with natural ecosystems

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Abstract

Soil organisms play principal roles in several ecosystem functions, i.e. promoting plant productivity, enhancing water relations, regulating nutrient mineralisation, permitting decomposition, and acting as an environmental buffer. Agricultural soils would more closely resemble soils of natural ecosystems if management practices would reduce or eliminate cultivation, heavy machinery, and general biocides; incorporate perennial crops and organic material; and synchronise nutrient release and water availability with plant demand. In order to achieve these goals, research must be completed to develop methods for successful application of organic materials and associated micro-organisms, synchronisation of management practices with crop and soil biota phenology, and improve our knowledge of the mechanisms linking species to ecosystem processes.

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