

## **On the role of soil fauna in providing soil functions – a meta study**

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Fertile soils are fundamental for the production of biomass and therefore for the provision of goods such as food or fuel. However, soils are threatened by e.g. land degradation, but once lost their functionality cannot simply be replaced as soils are complex systems developed over long time periods. Thus, to develop strategies for sustainable soil use and management, we need a comprehensive functional understanding of soil systems. To this end, the interdisciplinary research program "Soil as a Natural Resource for the Bio-Economy - BonaRes" was launched by the German Federal Government in 2015. One part of this program is the development of a Knowledge Centre for soil functions and services.

As part of the Knowledge Centre, we focus on the identification and quantification of biological drivers of soil functions. Based on a systematic review of existing literature, we assess the importance of different soil faunal groups for the soil functions and processes most relevant to agricultural production (i.e. decomposition, mineralization, soil structuring). Additionally, we investigate direct impacts of soil fauna on soil properties (e.g. aggregation, pore volume). As site specific conditions such as climate, soil type or management practices affect soil fauna and their performance, these responses must also be taken into account. In the end, our findings will be used in the development of modeling tools aiming to predict the impacts of different management measures on soil ecosystem services and functions.