



## **Effects of two decades of organic and mineral fertilization on earthworms and standardized litter decomposition**

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Organic fertilization promotes soil life and enhances soil biological functioning. At the AGES research station Ritzlhof in Upper Austria a field trial was designed in 1991, which examines the effects of different fertilization on soil biota and crop yields. The trial included a crop rotation with maize, wheat, barley and pea. Eight management variants comprised compost application (biowaste compost, green waste compost, cattle manure and sewage sludge compost). The composts were applied either alone ("organic") or with additional mineral nitrogen fertilization (80 kg N ha<sup>-1</sup>, "organic-mineral") and compared with a zero-fertilization (control) and pure mineral fertilization (40, 80, 120 kg N ha<sup>-1</sup> "mineral"). In this study earthworm activity and biomass, decomposition of organic matter and growth and biomass parameters of winter barley (*Hordeum vulgare* L.) were determined in 2014. This was after uniform mineral fertilization and one and a half years after the last compost application. Earthworm activity was significantly enhanced after long-term organic-mineral fertilization compared to the control, while the earthworm biomass was not significantly influenced by compost application. The decomposition rate was highest in the control variant. Only the length of the barley stems was significantly higher after long-term organic-mineral fertilization than in the control, all other barley parameters (including the biomass yields) showed no differences. The results indicated that long-term organic-mineral fertilization benefit soil biota, even if compost is not used every year.