

## CONTRIBUTION OF SOIL BIOTA TO THE STABILITY OF DEGRADED SOILS IN THE REPUBLIC OF MOLDOVA

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### Abstract

The biota of soils degraded as a result of a long-term arable use has been investigated statistically in the context of improving the soil stability and quality. The database of invertebrates, microorganisms and enzymatic activities of different zonal soils in the long-term field experiments has been developed from a viewpoint of the operative evaluation of the degradation processes and ecological effectiveness of the land management. The long use of soils in agricultural production led to the imbalance between the processes of decomposition and humus formation and promoted the decrease of soil biota stability and degradation. The current status of the biota of arable soils of the Republic of Moldova is characterized by the significant reduction in the abundance, biomass, activity and diversity in comparison with soil's standards that are in conditions of natural ecosystems. The highest values of invertebrates' abundance were registered in the soils with a normal profile under natural vegetation. Soil microbial biomass increased from 244.3-318.4  $\mu\text{g C g}^{-1}$  soil in arable soils to 355.8-876.0  $\mu\text{g C g}^{-1}$  soil in virgin and fallow soils. A land management with the involvement of areas with natural vegetation in a crop rotation system, organic fertilizers and perennial grasses created conditions for the improvement of the biota's vital activity in degraded soils. The recovery rate of the population of *Lumbricidae* family reaches of 3-5.6 worms  $\text{m}^{-2}$  per year. Annual increase in the content of microbial biomass in the typical chernozem can be up to 81.3  $\text{kg C ha}^{-1}$  in the layer of the 0-50 cm. The organic farming system greatly improves the enzymatic and humus status of the old-arable soils, but does not restore the biodiversity of invertebrates.

**Key words:** soil biota, degradation, stability, land management, organic fertilizers.

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