

**AFTEREFFECT OF FARMYARD MANURE AND INFLUENCE OF FULL MINERAL FERTILIZER ON
QUALITY INDICATORS OF BOTTOM PART OF SPodosol PLOUGH LAYER****A. V. Burova, E. V. Balashov**

The significance of changes in biochemical, microbiological and structural indicators of soil quality in a 10-20-cm layer after a three-year application of farmyard manure (FYM) in total rates of 220 t ha⁻¹, 540 t ha⁻¹ and after a subsequent application of full mineral fertilizer has been evaluated in the field experiment at the Menkovo branch of the Agrophysical Research Institute (Leningrad region). Compared with the control treatment, the aftereffect of farmyard manure resulted in a significant increase of: the organic carbon content in bulk soil samples in the treatment of 220 t ha⁻¹ FYM; the microbial biomass carbon content in bulk soil samples in the treatment of 540 t ha⁻¹ FYM and the water-stable aggregates content in the treatment of 220 t ha⁻¹ FYM; N₂O emission from bulk soil samples and from water-stable aggregates of both treatments. The application of full mineral fertilizer in the FYM treatments led to a significant increase in: the organic carbon content in water-stable aggregates in the treatments of 220 t ha⁻¹ FYM and 540 t ha⁻¹ FYM; particulate organic matter content in the bulk soil samples and in the water-stable aggregates in the treatments of 540 t ha⁻¹ FYM and 220 t ha⁻¹ FYM, respectively; N₂O emission from bulk soil samples and from water-stable aggregates in the treatments of 540 t ha⁻¹ FYM and 220 t ha⁻¹ FYM, respectively. The full mineral fertilizer stimulated the sequestration of organic matter in water-stable aggregates. However, the aftereffect of FYM in both rates and the application of full mineral fertilizer did not lead to any significant differences in the content of water-stable aggregates compared to control treatment.

Keywords: farmyard manure, full mineral fertilizer, indicators of soil quality, sandy Spodosol.

