

## SUMMARY

The object of the two-year experiments was to determine the dynamics of development of selected groups of microbes (oligotrophic, copiotrophic, proteolytic, cellulolytic and solving phosphate microorganisms) in the soil fertilized with communal sewage sludge. The aim of the performed investigations was to study the possibilities of disturbing the biological balance of soil as demonstrated by intensified and long-term development of the analyzed groups of bacteria in the soil following its fortification with different doses of organic matter in the form of sewage sludge. The following four soil treatments were applied in the trail: control – soil + NPK; 2 Mg d.m. of sludge·ha<sup>-1</sup>·year<sup>-1</sup> + NPK; 4 Mg d.m. of sludge·ha<sup>-1</sup>·year<sup>-1</sup> + NPK and 8 Mg d.m. of sludge ·ha<sup>-1</sup>·year<sup>-1</sup> + NPK. Phosphorus and potassium were applied pre-sowing during plowing and nitrogen was divided into two parts and the first of them was applied pre-sowing while the second – as top-dressing. Sewage sludge was applied pre-sowing. Experimental plots were sown with rye (variety of *Wibro*) in 2003 and planted with potatoes (variety of *Bila*) in 2004. It was demonstrated that the applied doses of sewage sludge exerted, practically speaking no statistically significant impact on the propagation of soil microorganisms. On the basis of the performed microbiological cultures, it was concluded that, during the analyzed period (2003–2004), the numbers of the examined groups of microorganisms varied depending on the date of soil samples collection. Soil samples for analyses were collected in each year of experiments at dates associated with the developmental phases of plants and in ten replications. Another factor which influenced the development dynamics of soil microorganisms was the species of the crop plant cultivated in the experiment. Rye, which was cultivated in 2003, turned out to stimulate the developmental of the majority of the examined groups of microbes (oligotrophic, copiotrophic, proteolytic, cellulolytic and solving phosphate microorganisms), while potatoes stimulated during their generative stage (16.07–28.08.2004) a stronger proliferation of cellulolytic microorganisms.