

## MICROBIOLOGICAL ACTIVITY AND PRODUCTIVITY OF SOIL COVERED WITH PLUM TREES

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**Background:** Microorganisms population, as major soil component, is very significant indicator of soil fertility, i.e. the process of soil degradation<sup>1</sup>. Microbial population density and enzyme activity of microorganisms may be highly reliable practical indicators which can suggest the answer to the question concerning conditions that favour plant production.

**Objectives:** The study of different rates of 8:16:24 + 3% MgO NPK fertilizer on the total number of microorganisms, the number of ammonifiers, fungi, actinomycetes, azotobacter, oligonitrophyls, proteinase activity and on plum yield.

**Methods:** The number of microorganisms was identified by indirect rarefraction methods on appropriate nutritive media.

Proteinase activity of soil was identified by *Romeiko* method.

**Results:** The three-year results (2003-2005) suggest that the application of high rates (800 and 1000 kg ha<sup>-1</sup>) of mineral fertilizers induced the decrease in the total number of microorganisms, the number of ammonifiers, fungi, actinomycetes, azotobacter, oligonitrophyls and proteinase activity of soil. The application of lower (400 kg ha<sup>-1</sup>) and moderate (600 kg ha<sup>-1</sup>) fertilizer rates brought about the increase in the total number of microorganisms as well as in the number of ammonifiers, fungi, actinomycetes, azotobacter and oligonitrophyls and proteinase activity of soil. The application of mineral fertilizers enhanced the number of fungi in soil (the highest number of fungi was observed in the variant with highest fertilizer rate).

The effect of the applied mineral fertilizers was most pronounced over the second sampling and in 2003.

The most significant increase in plum yield was realized by the application of 600 kg ha<sup>-1</sup> of mineral fertilizer.

**Conclusions:** Taking into account biological properties of soil, plum production, economic and environmental indicators of the results of the stated treatments, the rate of 600 kg ha<sup>-1</sup> can be recommended for growing plum under the stated environmental conditions.