

THE EFFECT OF AN ARTIFICIAL FERTILIZER AND A BACTERIUM PREPARATION (BACTOFIL[®] A10) ON THE PROPERTIES OF SOILS

JÁNOS KÁTAI, IMRE VÁGÓ, ZSOLT SÁNDOR, MAGDOLNA
TÁLLAI, ÁGNES OLÁH ZSUPOSNÉ

Debrecen University, Centre of Agricultural Sciences, Department of Agrochemistry
and Soil Science

H-4032 Debrecen, Böszörményi út 138.

Keywords: artificial fertilizer, Bactofil[®] A10 bio-manure, nutrient content, total bacterium number, CO₂-production, urease activity

In agriculture, one of the newest forms of the nutrient supply the application of bio-manures, using of bacterium preparations. In our experiment the effect of a bio-manure “Bactofil[®] A10” and an artificial fertilizer contained Ca(NO₃)₂ – next to basic treatment - on different soils were examined.

The pot experiment was carried out on three different soils (marshy meadow, calcareous chernozem, humus sand) with 1 kg soil per pots at the Department of Agricultural Chemistry of UD FA, in 2005-2006. In the treatments control, different quantities of Ca(NO₃)₂ and Bactofil A10 were applied. During the experiment, measurements were taken regarding to the nutrient content, and some microbial parameters of soils (total number of bacteria and fungi, number of nitrifying bacteria, CO₂-production, biomass-N, and activity of urease enzyme).

Estimation the results, both the artificial fertiliser and the Bactofil A10 proved to be efficient in the soil parameters examined. According the results, it can be stated, that in the different soils the readily available nutrient content changed in different degree. The available nutrient content increased by the treatments, especially in the marshy meadow and chernozem soils. Both the artificial fertilizer and Bactofil treatments had a beneficial effect on the microbial parameters of soils. Among the microbiological parameters, the most positive effect of treatments was measured in the nitrifying physiological group of bacteria. The soil respiration increased in all three soil types, but the highest CO₂-production was measured in the marshy meadow soil. Among the different soil types, the effects of treatments were less on the humus sand, where the humus content of soil is very low.

Based on our present results, which are the combined use of artificial fertilizers and bacterial products, can be a perspective possibility - in aspect of environmental protection, too - for preserving soil fertility, especially those soils, where the humus content suitable.