

THE EFFECT OF DIFFERENT HERBICIDES ON SOME FACTORS OF CARBON CYCLE IN A CHERNOZEM

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The sustainable agriculture is unimaginable without the application of different herbicides, at the same time these chemicals influence the soil microorganisms and by this means on the carbon cycle. The effect of herbicides on the living organisms can follow by the measurement of quantitative changing of microbes and the soil biological activity.

The small plot experiment was set up in 2005 and 2006. The effect of four different herbicides (Acenit A 880 EC, Frontier 900 EC, Merlin SV, Wing EC) was examined on the processes of soil microbiology. The herbicides were applied in different doses in maize. Soil samples were taken from the 2-5; 5-15; and 15-25 cm layers 6, 12 weeks after the application of herbicides. In the course of laboratory analyzes the aerobic cellulose decomposing bacteria, the CO₂-production and the microbial biomass-C were determined.

According to the average results of the two years it can be stated, that the quantity of aerobic cellulose decomposing bacteria increased with the depth in all the four herbicides treatments. The CO₂-production was stimulated by the Acenit, Frontier and Merlin, at the same time in case of Wing the production stayed at the control level. Both in the 2-5cm and 5-15 cm layer, all the herbicides decreased the quantity of biomass-C, but in the 15-25 cm layer only the Frontier and Wing had negative effect on the biomass-C.

In accordance with the microbiological results, the Frontier and Merlin had the smallest negative effects in the different layers on the parameters examined, so in the respect on environmental protection these applications could be recommended.