



## **Natural heterogeneity of industrially degraded soil**

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The problem of soil degradation is a widely discussed one, mainly due to the ever-increasing demand for cultivated land in the world. The term "degraded soils" is not strictly defined and, depending on the source, may cover a wider or narrower range of soils with specific origins, history and characteristics.

Soil as a three-phase system is by nature quite heterogeneous, so when designing any field experiment, both in the field and on soil material in laboratories, special attention is paid to the randomisation of plots, representative sampling and an appropriate number of measurement repetitions.

Long-lasting soil tillage obviously results in soil homogenization, which allows to assume a relative homogeneity of plots while designing the experiment. That in turn makes it possible to address every tested treatment to untreated controls. But what if we are dealing with degraded, uncultivated soil? Can we treat such object in the same way as cultivated soil?

The aim of this paper is to point out that assuming homogeneity of the field in experiment designing can be not fulfilled and in consequence cause the problems in the interpretation of the future results. We presented the variability of relatively a small area (1.25ha) of chemically degraded soil in the immediate vicinity of sulphur mines (Basznia Górna, south east Poland) where new, enriched microbiological fertilizers – as a recultivation treatment - are tested since beginning of 2018. Particle size distribution, dehydrogenase activity, microbial biomass and methanogenic activity of this soil were determined. While microbial biomass differences were insignificant, all other quantities showed statistically significant differences among tested variants.

The presentation is financed by the National Centre for Research and Development under the program BIOSTRATEG3, contract number BIOSTRATEG3/347464/5/NCBR/2017 "BIO FERTIL"