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PEDO-BIOLOGICAL PROCESSES IN EAST ANTARCTICA

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Polar zones in East Antarctica (Antarctic coast, Broknes and Stornes Peninsulas, Grove Mountains) were studied by Negoita (1998, 2002-2003) who gathered soil samples that were analyzed in the soil biology and chemistry laboratory of the University of Agronomical Sciences and Veterinary Medicine, Bucharest, Romania, in order to determine the soil forming level reached by the terrestrial crust in these zones of extreme climate.

To study the respective pedogenesis, the authors considered and compared those characteristics of the terrestrial crust alteration which essentially differentiate the mineral soil from the organic one, in which the biological circuit of biogenic chemical elements integrating both the vital processes and the biochemical (pedo-enzymic) ones develop. The soils were characterized from the microbiological, pedo-enzymic and chemical points of view. Soil vitality in different biotops was assessed based on the values of the bacterial colony number, respiration potential and cellulosolytic potential. To estimate the vital and enzymic processes in polar soils, modular and synthetic biological indicators elaborated by Stefanic, i.e. the Indicators of Vital Activity Potential and of Enzymic Activity Potential, and the Biological Synthetic Indicator, all fit for integrating the soils in fertility classes, were used.

The potential activities of some enzymes in the researched areas (catalasic, saccharasic and total phosphatasic potentials) confirm the findings referring to the microflora and vital processes.

The elaborated comparison of soil forming stages, based on the biological indicators suggests that the soils of the Antarctic coast are more fertile than those of Grove Mountains (at 500 km from the shore, inside the continent)

The soil forming evolution level in the researched polar areas is assessed to be a pedoclimax level, that is a process in a steady equilibrium with the climatic conditions of each zone.