



## **Soil microbiomes of reclaimed and abandoned mines of Yamal region**

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Soil microbiome play very important role in development of soil profile and implementation of soilbiochemical processes, especially for initial stages of soil regeneration after strong antropogenic impact. The developing soils of postmining landscape of Central Yamal (Russia, Yamal demi-island) and soil microbiome composition was investigated for the first time by use metagenomic approaches.

The study includes sampling from heaps of abandoned mines of chromatic ore and sand quarries, reclaimed sand heap and mature larch forest as a reference. We analyzed several agrochemical parameters (pH, C- and N-content, basal respiration and other) and microbial community structure, measured quantitatively by RT-PCR and qualitatively by use high-throughput sequencing of 16s rRNA gene sequence libraries.

Investigated soils showed low content of organic carbon and total nitrogen. Soil regeneration and soil basal respiration rate were considered as slow for tundra and forest tundra zones, which indicates the low level of soil microbiological activity. The highest total content of bacteria, acrchaea and fungi was revealed for soils of sandy and clay texture heaps and reclaimed soils. Reclamation practice result in sharp increasing of bacteria, archaea and fungi counts. At the same time, reclaimed soils showed the lower values diversity indexes in comparison with soils of abandoned mines.

In taxonomic analysis composition of microbiomes that were revealed, many taxa was described previously as dominant groups in different cold environments, including alpine soils. Among them are Chthoniobacteraceae, bacteria from order Ellin 6513, Koribacteriaceae, Gaiellaceae and other.

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