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Chitinolytic and pectinolytic community in the vertical structure of chernozem's zone ecosystems

E. Lukacheva and N. Manucharova

Lomonosov Moscow State University, Department of Soil Science, Russian Federation (lukacheva.sovel@gmail.com)

Chitin is a long-chain polymer of a N-acetylglucosamine and is found in many places throughout the natural world.
Pectin is a structural heteropolysaccharide contained in the primary cell walls of terrestrial plants. Roots of the plants and root crops contain pectin.
Chitin and pectin are widely distributed throughout the natural world. For this reason it is important to investigate the structural and functional properties of complex organisms, offering degradation of these biopolymers in the terrestrial and soil ecosystems.
It is known that ecosystems have their own structure. It is possible to allocate some vertical tiers: phylloplane, litter (soil covering), soil. We investigated chitinolytic and pektinolytic microbial communities dedicated to different layers of the ecosystem of the chernozem zone.
Quantity of eukaryote and procaryote organisms increased in the test samples with chitin and pectin. Increasing of eukaryote in samples with pectin was more then in samples with chitin. Also should be noted the significant increasing of actinomycet's quantity in the samples with chitin in comparison with samples with pectin. The variety and abundance of bacteria in the litter samples increased an order of magnitude as compared to other options investigated.
Further prokaryote community was investigated by method FISH (fluorescence in situ hybridization). FISH is a cytogenetic technique developed that is used to detect and localize the presence or absence of specific DNA sequences on chromosomes.
Quantity of Actinomycets and Firmicutes was the largest among identified cells with metabolic activity in soil samples. Should be noted significant increasing of the quantity of Acidobateria and Bacteroidetes in pectinolytic community and Alphaproteobacteria in chitinolytic community.
In considering of the phylogenetic structure investigated communities in samples of the litter should be noted increase in the segment of Proteobacteria. Increasing of this group of microorganisms was also detected in samples of the phylloplane. Also should be noted increasing of Baceroidetes in these samples.
Further inoculation from investigated samples was provided. The dominant species of microorganisms were isolated on dense nutrient media. These microorganisms were detected by sequence analysis.
Thus the differences of decomposing biopolymers were educed in the microbial communities in the terrestrial and soil ecosystems.