



Chitinolytic and pectinolytic community of chernozem and podzol soils

Evgenya Lukacheva and Natalia Manucharova

Department of Soil Science, Lomonosov Moscow State University, Moscow, 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. It is the main component of the cell walls of fungi, the exoskeletons of arthropods such as crustaceans (e.g. crabs, lobsters and shrimps) and insects. *N*-acetylglucosamine is also a component of peptidoglycan cell wall in various Gram-negative bacteria. Chitin is also recognized as a significant fraction of humus-bound nitrogen in soil. Pectin is a structural heteropolysaccharide contained in the primary cell walls of terrestrial plants. Roots of the plants and root crops contain pectin. The breakdown of chitin and pectin within chernozem and podzol was studied. The aim was to provide a characterization of microorganisms involved in chitin and pectin degradation in the soils. Quantity of eukaryote and procaryote organisms increased in the soil's 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. 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 *Firmicures* was the largest among identified cells with metabolic activity in both types of the samples. Should be noted significant increasing of the quantity of *Acidobateria* and *Bacteroidetes* in pectinolytic community and *Alphaproteobacteria* in chitinolytic community of the under consideration soils.