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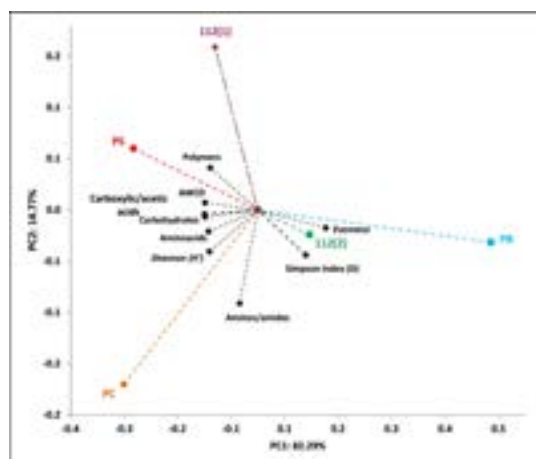
# Microbial Interactions & Microbial Ecology

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## Analysis of functional and structural microbial diversity of *Paulownia* spp. leaves

Małgorzata Woźniak<sup>1</sup>, Anna Gałązka<sup>1</sup>, Jarosław Grządziel<sup>1</sup> and Magdalena Frąc<sup>2</sup><sup>1</sup>Department of Agricultural Microbiology, Institute of Soil Science and Plant Cultivation - State Research Institute, Puławy, Poland<sup>2</sup>Institute of Agrophysics, Polish Academy of Sciences, Lublin, Poland

The *Paulownia* spp. is a fast growing variety of deciduous tree that belongs to the Paulowniaceae family. These trees are used to produce biomass and reduce carbon dioxide concentrations in the atmosphere. *Paulownia* spp. leaves have a high content of protein, fats, sugar and nitrogen, phosphorus, potassium (NPP). The purpose of this study was to determine the functional and genetic diversity of the microbial of the *Paulownia* spp. Next Generation Sequencing (NGS) and Biolog EcoPlates were used to evaluate microbial diversity. The research materials were leaves of trees *Paulownia* spp. Plant samples were taken from Podkamins (a plantation established on arable soil) and Otrębusy (a plantation established on degraded soil). The samples were the clones of the same hybrid *Paulownia elongata* and *Paulownia fortunei*. Additional hybrid of *Paulownia tomentosa* and *Paulownia fortunei* was included. The functional analysis was carried out using statistical methods: cluster analysis by Ward's method, taking into account Euclidean square of distance. Moreover, the Shannon-Wiener ( $H'$ ) biodiversity index, R Richness, E Evenness, and AWCD (average well color development) were calculated. The obtained sequences were subject to bioinformatics analyses, such as clustering and separation of operational taxonomic units (OTU). The samples from the plantation established on degraded soli revealed that the most dominant phylum was *Bacteroidetes*, whereas from the arable soil, Proteobacteria. Comparisons of carbon source utilization and the diversity indices showed differences in the microbial community of composition. Among the five carbon sources studied, carbohydrates were the most frequently used group of compounds.



### Recent Publications:

1. Ayan S., Sadlam I., and Sivaciödlü A. (2003) *Paulownia* Sieb. & Zucc: A new exotic genus for multi-purpose uses in Kastamonu-Turkey. *Decision Support for Multiple Purpose Forestry* 4: 23-25.
2. Whipps J., Hand P., Pink D., and Bending G. D. (2008) Phyllosphere microbiology with special reference to diversity and plant genotype. *Journal of Applied Microbiology* 105(6): 1744-1755.
3. Yadav N. K., Vaidya B. N., Henderson K., Lee J., Stewart, W. M., Dhekney S. A, and Joshee, N. (2013) A review of *Paulownia* biotechnology: A short rotation, fast growing multipurpose bioenergy tree. *American Journal of Plant Sciences* 4: 2070-2082.

4. Garland J. L. and Mills A. L. (1991) Classification and characterization of heterotrophic microbial communities on the basis of patterns of community-level sole-carbon-source utilization. *Applied and Environmental Microbiology* 57: 2351-2359.

### **Biography**

Małgorzata Woźniak obtained a master degree in biology with specialization microbiology in 2015. She studied at Maria Curie-Skłodowska University (UMCS) in Lublin, Poland. She work in Department of Agricultural Microbiology, Institute of Soil Science and Plant Cultivation in Poland. She is principal Investigator (head of the project) in two projects: the research project in the statutory activity of IUNG-PIB, Title of project: "Molecular and biochemical identification of the endophytic bacteria and it application in plant growth promoting" and Preludium project, the National Science Center, Title of project: "The influence of fast-growing *Paulownia* Clon In Vitro 112 (*P.elonagata* x *P.fortunei*) on microbiological and physico-chemical properties of the soil in Poland".

mlyszcz@iung.pulawy.pl