

REPUBLIC OF ESTONIA Ministry of education and research





Project"Sustainableuseofsoilresourcesinthechangingclimate(SUCC)".OverviewofactivitiesbytheLithuanianteam(LAMMC)in2022.

Dr. Jelena Ankuda and Dr. Kęstutis Armolaitis

EEA (European Economic Area) Grants, Baltic Research Programme.

SUCC spring 2022 meeting, 02.06.2022.

Lithuanian team

- The PostDoc Dr. Jelena Ankuda acted as a Principal investigator (PI) on the Lithuanian side. Her functions in 2022 were: project coordination and administration, data analysis, analyzing literature on the topic of the project, and planning and writing scientific publications.
- Dr. Kęstutis Armolaitis acted as a Co-Principal Investigator (Co-PI) and the Chief researcher. His functions in 2022 were: analyzing literature on the topic of the project, and planning and writing scientific publications.

Following people are participating in the project SUCC, but they were not formally employed in the spring of 2022:

- **Diana Sivojienė.** Her functions were bioinformatics of metagenomic data, analysis of metagenomic data, analyzing literature on the topic of the project, and writing scientific publications.
- Audrius Jakutis. His functions were data analysis, analyzing literature on the topic of the project, and writing scientific publications.
- Dr. Jūratė Aleinikovienė. Her functions were analysis of data of soil microbiota biomass C and N, analyzing literature on the topic of the project, and writing scientific publications.
- Dr. Donata Drapanauskaitė. Her functions were analysis of data from performed chemical analyzes, analyzing literature on the topic of the project, and writing scientific publications.



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Activities and plans in 2022:

This year (2022) we are planning to publish one scientific article in a journal indexed in the Clarivate Analytics Web of Science database (with impact factor (IF)) and write and send to journal of analogous quality another scientific article.

We received some metagenomic data from an Estonian partner.

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Part of these data was with bioinformatics (Part of Lithuanian Type III soil samples, in Scots pine stand (Arenosol, Southwestern Lithuania, Jūrė small town near Kazlų Rūda)). We are analyzing this data now.

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Activities and plans in 2022:

At this moment we write a scientific publication "Soil organic carbon stocks and diversity of soil fungi along depth of Arenosols". This year we plan to publish this article in the journal "Environmental Microbiology Reports" (IF=3.541) or "Annals of Microbiology" (IF=2.12).

It was found that:

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- 100947 (87.8%) sequences and 2369 (55.6%) OTUs were classified as Fungi.
- The highest number of reads for fungi and the OTUs of fungi were at the soil depth 100-105 cm.
- The most abundant phyla in all soil depths were Ascomycota (47.2%) and Basidiomycota (44.8%). The third most abundant phyla were Mortierellomycota or Mucoromycota.
- The relative abundance of Ascomycota was the highest in soil depth from 10-15 to 100-105 cm, meanwhile in the depths 0-5 cm, 150-155 cm, and 195-200 cm more abundant was Basidiomycota.



Figure 1. Relative abundance of most common fungal OTUs under the phylum level.

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Plans for 2022 and 2023:

We received some metagenomic data from an Estonian partner.

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- Another part of metagenomic data (Lithuanian Type III, Luvisols, and additional Lithuanian soil samples), that we received from an Estonian partner, is analyzed using bioinformatics. Diana Sivojienė is now doing this work.
- When we will have processed metagenomic data, we will write other scientific publications (using data of Lithuanian Type III soil samples and data of additional Lithuanian soil samples).





Plans for 2022 and 2023:

 Dr. Martin Maddison also sent us results of GHG emission concentrations at 25 Lithuanian plots in 2022. CO2 emission concentrations were measured and soil samples to determine emissions of N2O, CH4 were collected in 2021 at Type I, Type II, and Type III sites: forests and croplands, abandoned croplands, perennial grasslands, agroforestry land).

These data are also planned to be published in a scientific publication.









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Plans for 2022 and 2023:

- We plan also to write a scientific article "Soil bacteria and fungi related organic matter and nitrogen turnover in soils with different soil management practices" using data of Lithuanian Type II samples (Land abandonment / afforestation chronosequence), but we need to receive metagenomic data of these sites from Tartu University.
- Also, probably, all countries could write a common article using Type I soil samples data. Because it could be an article about changes of microorganism abundance, species composition, organic carbon concentrations, and other parameters "North-to-South transects" in Scots pine forest (60 – 100-year-old), in silver birch forest (48 – 68-year-old), and in perennial grassland.

But we also need to have metagenomic data of Type I and Type II sites. Is it possible?

Thank You for Your attention

