

Hybrid Event

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Studying potato bacterial diseases, caused by *Pectobacterium* and *Dickeya* species in Georgia

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Potato is an important commodity in Georgia. However, the potato's average yield is low (12 t/ha). One of the significant reasons for this is bacterial diseases. During the 2020-2021 surveys were collected the samples of infected plant stems and potato tubers from depositaries and fields, in the villages located in Kobuleti (10 m above sea level), Khulo, Akhalkalaki (at an altitude of 900-1200 m above sea level), and Goderdzi Pass (2025 m above sea level).

Within the framework of the project funded by the Shota Rustaveli National Science Foundation's 2019 Young Scientists Research Grant, I had the opportunity to study for the first time the distribution area of potato soft rot, the species structure of the disease causal agent, and determine the biodiversity of the internal population, which is spread in different potato producing regions of Georgia: Adjara (Khulo, Keda, Kobuleti) and Samtskhe-Javakheti (Akhalkalaki, Akhaltsikhe). Analyzing the collected 75 samples, 54 isolates were identified using the study's classical and modern molecular biology methods. 33 isolates of which belonged to *Dickeya* spp. species of which 27 corresponded to *D. Solani* (Kob.5.20, Akh.8.20, Akh.12.20, Kh.13.20) and seven isolates were identified as a *Pectobacterium* spp. The study found that potato blackleg and soft rot were most common in the municipality of Kobuleti (Tsetskhauri, Gvara, Jikhanjuri), Khulo (Tabakhmela, Dioknisi, Update, Shuasopeli, Cheri, Dzmagula, Pachkha, Kinchauli, and Akhaltsikhe (Vale, Tsnisi, Skhvilisi) and the majority of disease-causing agents (70%) belonged to *Dickeya* spp. and among them, one of the most aggressive species in the Europe *D. solani*. The research conducted was interdisciplinary as it included phytopathological, microbiological, biochemical, and molecular biology research methods. Therefore, the results of the research are equally interesting and useful for agrarian and natural sciences, as well as for students of the Faculty of Agrarian and Natural Sciences. Importantly, part of the project research was carried out with the participation of leading scientists from the Plant Protection Institute of the Agricultural Research Organization (ARO), Gilati Research Center in Israel, which created a precondition for future fruitful cooperation, which will undoubtedly contribute to the university's Phyto pathological direction and development to modern standards. As a result of the research, new information and materials were accumulated to continue further research to develop measures to combat potato mild rot disease.

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Biography

Maka Muradashvili, Young Scientist–PhD in Biology. From 2010 to the present, she is a scientific worker at the Department of Plant Diseases Monitoring, Diagnostics and Molecular Biology, Institute of Phytopathology and Biodiversity, BSU. During his 10 years of work, he was actively involved in 6 scientific projects, both as a key participant and as a scientific manager. Among them, she was also the scientific manager of the targeted -research project financed by Batumi State University, which was about, to study the antimicrobial properties of extracts from Stevia leaves. Now she is the coordinator of the current National Science Foundation's joint project # FR-21-1778 with the Eliava Institute of Bacteriophage, Microbiology, and Batumi Shota Rustaveli State University comprises 7 faculties: Economics and business, humanities, exact science and education, law and social sciences, natural sciences and health care, technologies, and tourism. It also embraces the 3 Research Institutes of Niko Berdzenishvili Institute, Agrarian and Membrane Technologies Institute, Institute of Phytopathology, and Biodiversity. At present about 6000 students' study at the vocational, Bachelor, Master and Doctoral programs. The facilities and equipment of the Shota Rustaveli State University have been increasing and improving step-by-step, number of students increasing, teaching programs improving, new specialties introduced, qualified staff prepared. The teaching and research processes involve 273 professors, 71 researchers and 387 visiting professors.

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