Bioeconomy Research Institute: *Connecting scientists and other innovation actors for interdisciplinary R&D*

October 2022





Established in January 2022, the **Bioeconomy Research Institute** is a department of Vytautas Magnus University Agriculture Academy for the initiation, coordination and implementation of the interdisciplinary R&D activities integrating agricultural, technological, natural and social sciences to solve complex challenges and unlock emerging opportunities in the field of bioeconomy development.



VYTAUTAS MAGNUS UNIVERSITY





Main research areas of the Institute

Sustainable food systems

#Development of high value-added, safe and innovative food raw materials and products #Boosting value of legumes in sustainable agriculture

• Climate smart and digital agriculture, forestry and water management

#Ecosystem services in the context of climate change #Sustainable land, forest and water technologies #Climate and environment-neutral biosystem technologies

Renewable energy resources

#The role of bioenergy in the transition to a carbon neutral society #Development of innovative biopower plants and use of digestate fertilizers in sustainable agriculture #Sustainable use of biomass for energy conversion and fertilization

• Development and implementation of business innovations in the bioeconomy

#Development of rural areas and bioeconomy business organizations

EU bioeconomy development goals

- Ensuring food and nutrition security
- Managing natural resources sustainably
- Reducing dependence on non-renewable unsustainable resources, whether sourced domestically or from abroad
- Mitigating and adapting to climate change
- Strengthening European competitiveness and creating jobs



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Prof.

Ewelina

(Poland)

Profile

Hallmann



Prof. Arvydas **Povilaitis** (Lithuania) Profile

#Water quality #Water quality modelling #River hydrology #Water management #Restoration of disturbed water ecosystems *#Nature-driven* water treatment technoloaies

Dr. Darius Kavaliauskas (Germany) Profile

#Forestry *#Organic food* **#Forest genetics** #Bioactive **#Population** compounds aenetics #Oraanic and #Forest conventional reproductive agriculture material *#Organic food* and human *#Conservation* of forest genetic health *#Polyphenols* resources *#Forest genetic* #Carotenoids monitoring #Vitamins

#Fruits and veaetables



Dr. Kristina Lekavičienė (Lithuania) Profile

> *#Working* processes of soil tillage machines (technical parameters of working parts, physicalmechanical properties of soil. reduction of environment pollution and energy consumption)



Prof. Eglė Sendžikienė (Lithuania) Profile

#Biofuel and biogas production, usaae and influence on environment

#Multi-phase heat transfer and fluid dunamics #Heat exchangers *#Heat pipes* #Nuclear engineering #Thermohydrolics #Thermal management

Prof.

(UK)

Profile

Hussam

Jouhara



Dr.

Hossein Azadi (Belgium) Profile

#Food security #Agroecology *#Development* and environment *#Land and food* policies #Land aovernance #Mixed-method approaches #Decision support systems #Fuzzu

modellina

Assoc. prof. Jolita Greblikaitė (Lithuania) Profile

#Social entrepreneurship #Youna entrepreneurs #Risk management #Farm manaaement #Bio-based businesses







Agriculture

Academy

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Some of the recent R&D projects of Agriculture Academy

 Integrated services supporting a sustainable agroecological transition (AgroServ), Horizon Europe, 2022– 2027.

The project features a large consortium of research infrastructures, most of them being on the EU roadmap, and a vast offer of services at all scales, from the molecule to the organism, to the ecosystem, to the society. The AgroServ will facilitate a systemic and holistic approach to understand the threats and challenges agriculture is facing, towards the implementation of a resilient and sustainable agrifood system.

• European food chain supply to reduce GHG emissions by 2050 (ENOUGH), Horizon 2020, 2021–2025.

The ENOUGH objectives are: i) Reducing GHG emissions by at least 50% by 2050; ii) Reducing energy use and increasing energy efficiency by 2030; iii) Increasing the overall sustainability of food systems; iv) Providing selected innovative technological systemic solutions and their potential for uptake at EU. The partnership draws together 29 partners from 11 EU nations and the UK with expertise across the whole food chain.

Holistic management practices, modelling and monitoring for European forest soils (HoliSoils), Horizon 2020, 2021–2025.

The HoliSoils will develop a harmonized soil monitoring framework by filling in knowledge gaps to ensure climate and sustainability goals are being met. The goal is to develop effective numerical forecasting of soilbased greenhouse gas mitigation practices and ensure sustainable provision of various ecosystem services.

Potential of selective harvest based on mycotoxins content assessment in cereal crops (POSHMyCo), ICT-AGRI-FOOD, ERA-NET Co-fund under Horizon 2020, 2021–2024.

The project will establish a novel solution to reduce the risk of mycotoxin contamination in food products originated from barley and wheat grains by adopting smart farming technologies. The solution will help to increase farming profitability and to reduce environmental footprint and the risk to human health and livestock related to consuming unhealthy products originated from barley and wheat grains. Studies of the variability of biologically active and anticancer compounds in organically and biodynamically grown and fermented fireweed (Chamerion angustifolium (L.) Holub) leaves, Ekhaga Foundation, 2022–2024.

The aim is to investigate the influence of biodynamic growing technology and the parameters of solid-phase fermentation on the variation of biologically active substances in leaves of fireweed. Scientific experiment will explore the leaves of organically and biodynamically grown and fermented fireweed, and the variation of the biologically active substances contained therein, depending on the method of cultivation and fermentation.

Accelerating circular bio-based solutions integration in European rural areas (BioRural), 2022–2025.

The goal is to create a European Rural Bioeconomy Network to promote small-scale bio-based solutions in rural areas and support the transition towards a sustainable, regenerative, inclusive and just circular bioeconomy across all Europe at local and regional scale.

Other projects: https://www.vdu.lt/cris /explore/fundings_and _projects Bioeconomy Research Institute / 7

Other resources of Agriculture Academy

Infrastructure

• Experimental station and training farm

The experimental station hosts more than 50 field experiments annually in the priority areas of agricultural sciences, features about 3 thousand experimental fields, and serves as a 150 ha repository for the plant, crop rotation collections and intercrops that are updated on an annual basis.

The training farm of 430 ha is for experimental and educational activities, the implementation and development of innovations and the most advanced crop production technologies. It covers intensive, sustainable and organic farming, animal husbandry.

• Open access research centres

The Open Access Joint Research Centre of Agriculture and Forestry (LITAGROLAB) and the Open Access Centre of Biosystem Engineering, Biomass Energy and Water Engineering (BIBEVI) are located in Vytautas Magnus University Agriculture Academy (former Aleksandras Stulginskis University).

More information: https://zua.vdu.lt/en/research/open-access-centre/

• Academic and exhibition facilities

Vytautas Magnus University Agriculture Academy is situated in the area of 719 ha and has 5 academic buildings (with around 40 auditoriums, 40 classrooms, 100 laboratories, and a library), the experimental station and the training farm, outdoor stadium, and exhibition facilities suitable for large-scale events.

Keywords of scientific articles published in the first quartile journals in 2021

pollution curonian intraspecific pro-environmental composition approach conservation ghg chemical effect business economics nitrogen tree decision density europe oak functional lagoon sylvestris managemen stands variation manure species traits **variability** development emissions change factors migration energy properties ecosystem productivity green born environmental leaf weed material engagement characteristics sustainability ssr indicators yield pinus phenotypic content diversity rural climate analysis anthropogenic fertilization stand system assessment solid genetic modelling rate weeds



Let's collaborate

Collaborations in the development of joint R&D projects under the following programmes are of our interest:

1. Horizon Europe

Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture and Environment

New calls to open soon: <u>https://rea.ec.europa.eu/funding-and-grants/horizon-europe-cluster-6-food-bioeconomy-natural-resources-agriculture-and-environment_en</u>

EU Missions:

- A Soil Deal for Europe: 100 living labs and lighthouses to lead the transition towards healthy soils by 2030 (https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eumissions-horizon-europe/soil-health-and-food_en)
- Restore our Ocean and Waters by 2030
 (https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eumissions-horizon-europe/restore-our-ocean-and-waters_en)

2. LIFE Programme

The EU's funding instrument for the environment and climate action: <u>https://cinea.ec.europa.eu/programmes/life_en</u>

3. Circular Bio-based Europe Joint Undertaking

Partnership between the EU and the Bio-based Industries Consortium that funds projects advancing competitive circular bio-based industries: <u>https://www.cbe.europa.eu</u>

4. Interreg Baltic Sea Region Programme

New calls to open soon: <u>https://interreg-baltic.eu/gateway/</u>



Contact us



Virginija Kargytė Deputy Director for International Affairs <u>virginija.kargyte@vdu.lt</u> Profile



Rytis Skominas Director rytis.skominas@vdu.lt Profile



Zita Kriaučiūnienė Chair of the Institute's Board <u>zita.kriauciuniene@vdu.lt</u> Profile





Bioeconomy Research Institute

Vytautas Magnus University Agriculture Academy Studentų Street 11, Akademija, 53361 Kaunas District, Lithuania

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