

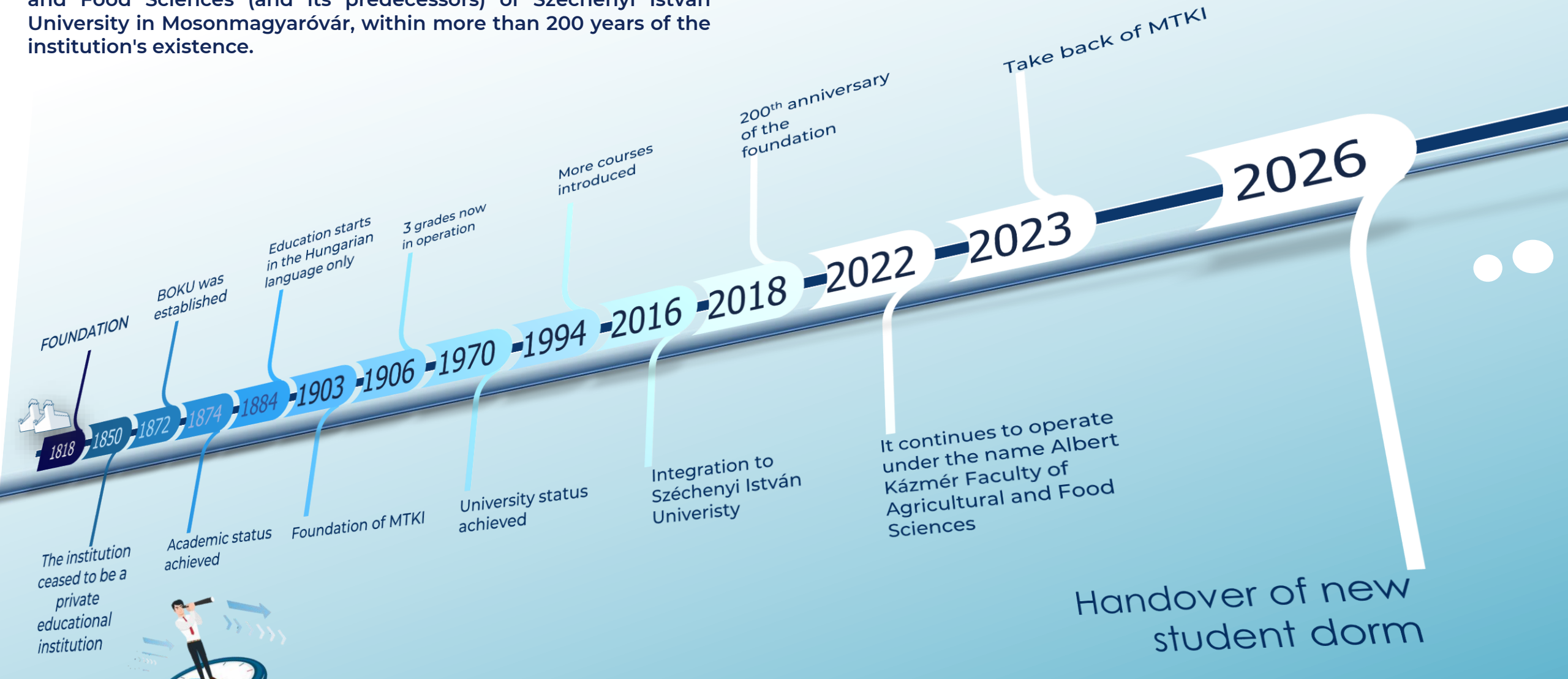


SZÉCHENYI ISTVÁN UNIVERSITY

**ALBERT KÁZMÉR FACULTY OF
AGRICULTURAL AND
FOOD SCIENCES**

MILESTONES

The major achievements of Albert Kázmér Faculty of Agricultural and Food Sciences (and its predecessors) of Széchenyi István University in Mosonmagyaróvár, within more than 200 years of the institution's existence.



AT THE „GATEWAY TO THE WEST”

PROXIMITY TO MAJOR CITIES

Bratislava 33 km
Győr 35 km
Sopron 56 km
Vienna 76 km
Budapest 140 km

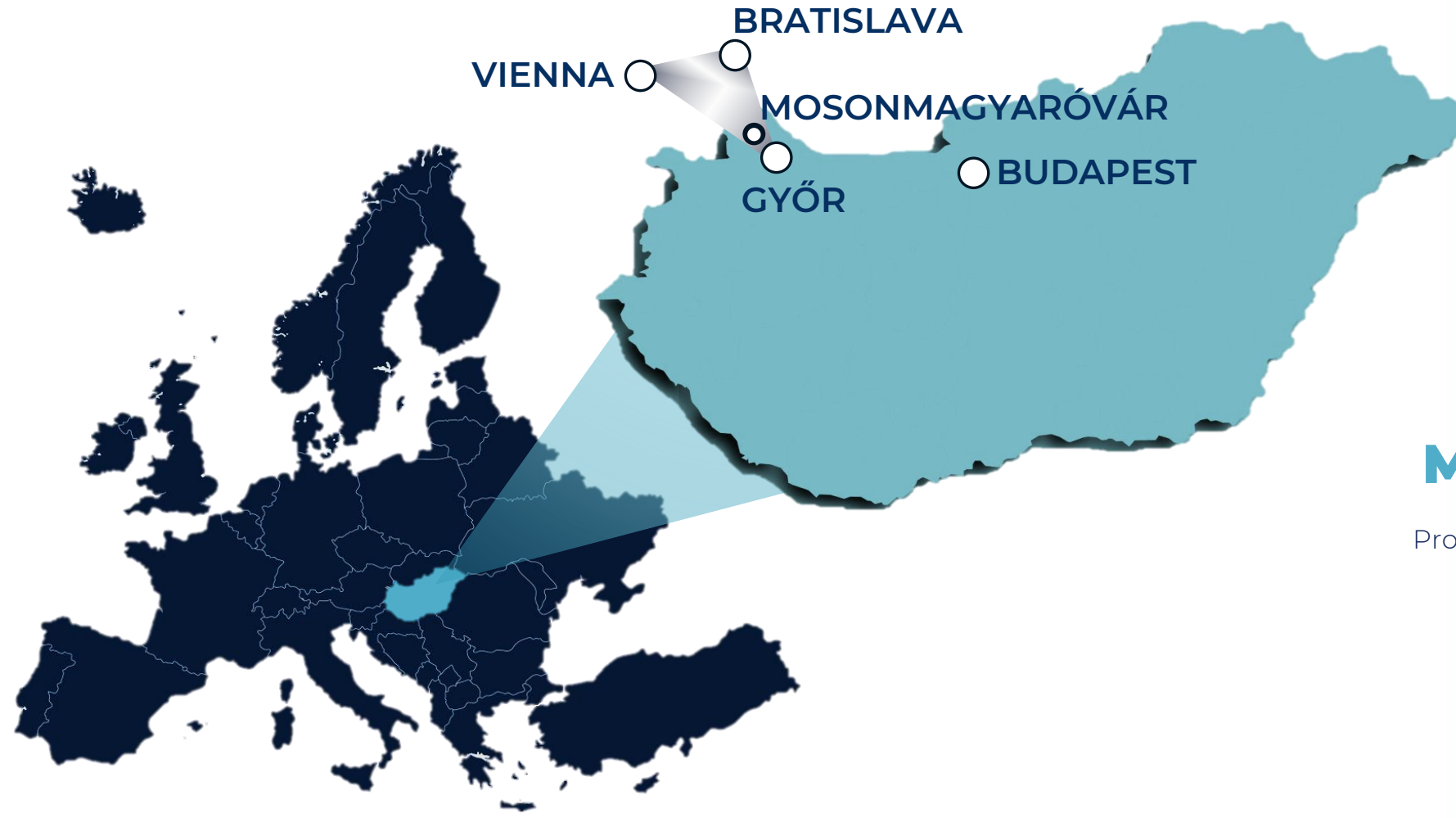
MOSONMAGYARÓVÁR

Proximity of the borders of Austria and Slovakia

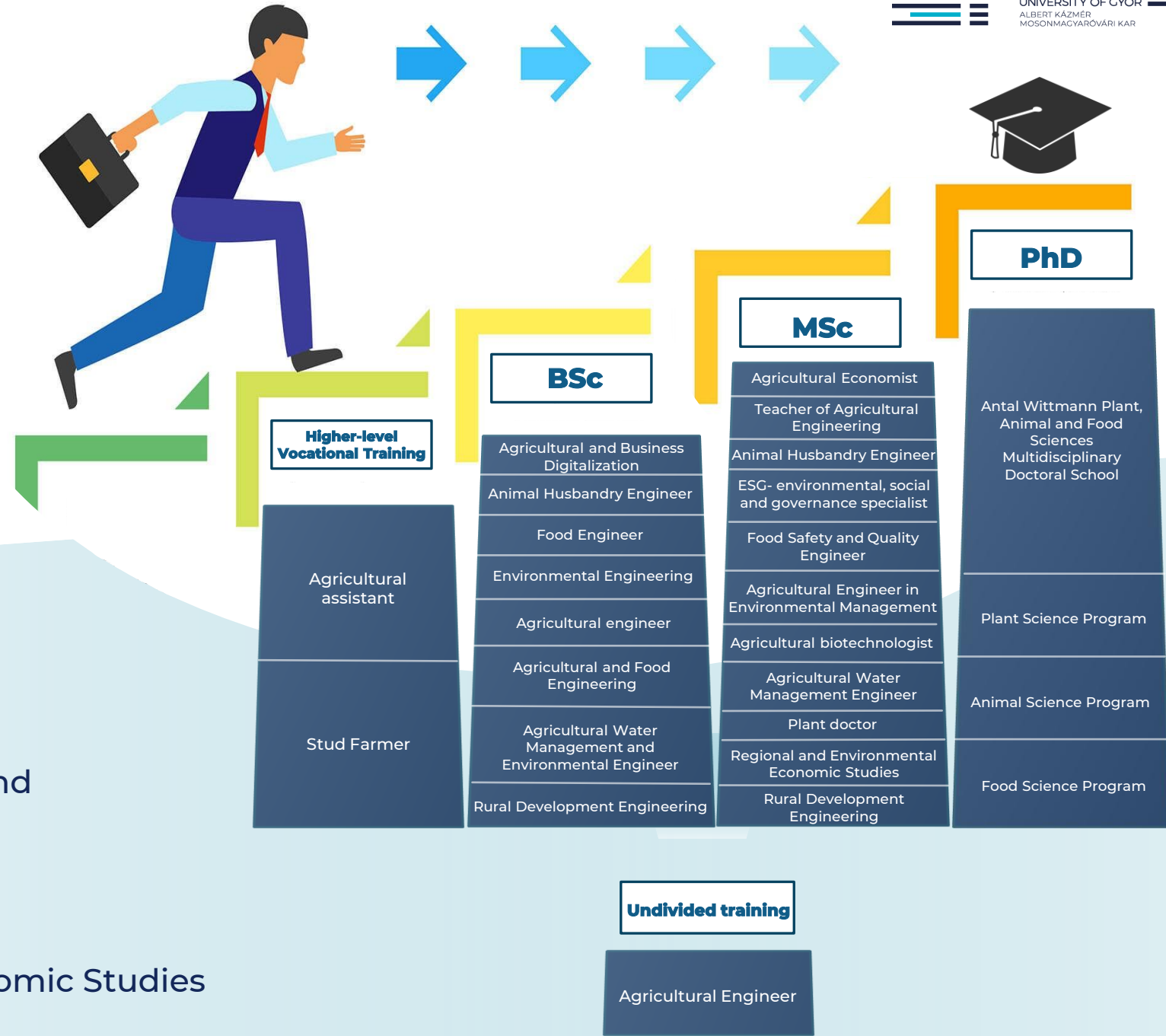
Many job opportunities

Competitive income in the region

The "Blooming City"



WE OFFER COURSES AT ALL LEVELS



Also in ENGLISH!:

- BSc Food Engineer
- BSc Agricultural Water Management and Environmental Engineer
- BSc Agricultural Engineer
Also in Dual training ↪
- Msc Regional and Environmental Economic Studies

TRAINING OPPORTUNITIES

- Agri-digitalisation Engineer/Specialist
- Agricultural Sales Specialist
- Drone Technology Engineer/Specialist
- Drone Controller and Data Analyzer
- Precision Livestock Farming and Animal Nutrition Engineer/Adviser
- Precision Agricultural Engineer/Adviser
- Wildlife

MICROCERTIFICATION TRAINING COURSES

- Agri-Informatics and Agri-Digital Specialist
- Drone Flying Practice
- Infrastructure Monitoring
- Fruit Tree Pruning
- Consultant Supporting the Digital Transition Agricultural Enterprises
- Microbiology Laboratory Technician
- Plant Protection Drone Pilot Training
- Training course for Uptaining an Unmanned Aircraft Pilot Operator Licence
- Sustainable Agricultural Production for Healthy Food
- Cattle Inseminator
- Training course for Obtaining the „T” Category Driver’s Licence



- Energy Loss Investigation Auditor Specialist Engineer
 - Fishery Engineer
- Hydrogen Systems Specialist
- Hydrogen Systems Engineer
 - Plant Protection Engineer
 - Organic Farmer



10.000+

Graduated „Óvári gazdasz”

1000+

Students

80+

International students

4

Study programs
in English

65

PhD students

21

Study programs
in Hungarian

OUR FACULTY

KEY FACTS

10+

Projects

10

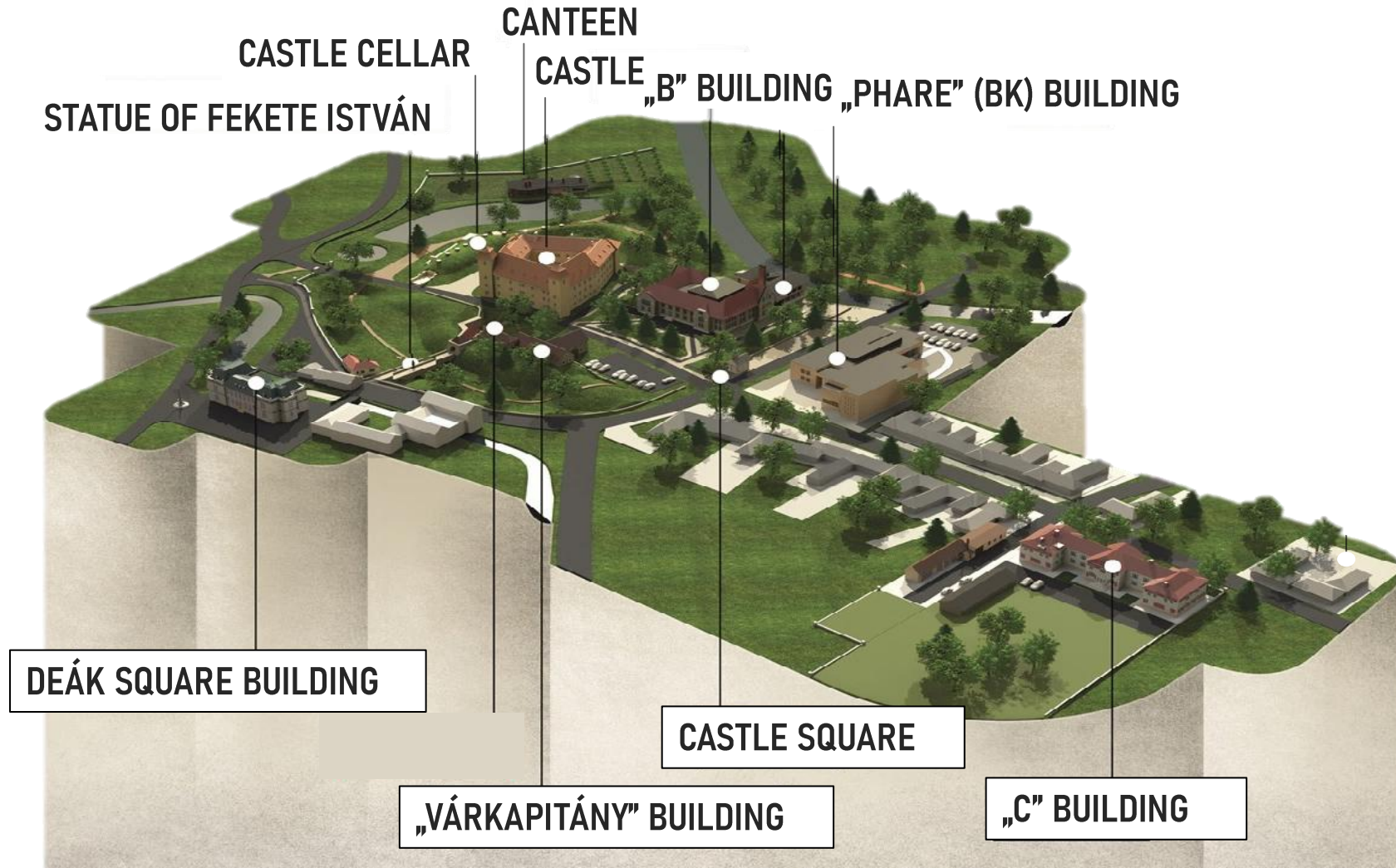
Departments

70+

Model farms

THE CAMPUS OF ALBERT KÁZMÉR FACULTY OF AGRICULTURAL AND FOOD SCIENCES

- › In the center of Mosonmagyaróvár
- › Near **cafes and restaurants**
- › **Natural** environment
- › **Green and clean**
- › Constantly **renewing**





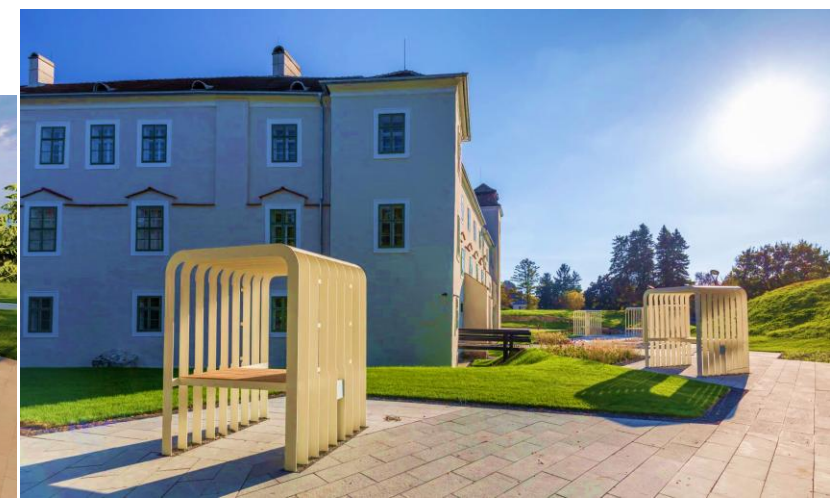
CATERING FREE TIME RECREATION

- › Kitchen for education
 - › Strauss Cafe
- › Castle promenade and the shore of the castle lake



Under construction

- › New student dorm facility
- › Restaurant and beer garden





DEPARTMENT OF AGRICULTURAL ECONOMICS

EDUCATION

- › Agricultural economics
- › Agricultural policy
- › Environmental economics
- › Economics
- › Farm management
- › Basics of accounting
- › Agromarketing
- › Statistics
- › Human resource management
- › Basic banking knowledge
- › Biometrics
- › Project management
- › Local economy and business development

STUDY PROGRAMS

- › BSc Agricultural and Business Digitalization
- › Undivided Training Agricultural Engineer
- › MSc Agricultural Economist
- › MSc Teacher of Agricultural Engineering



RESEARCH AREAS

- › Generational change in agriculture
- › **Short food supply chains (SFSCs)** in Hungary
- › Assessment of taxonomy and sustainable activities in Hungarian food industry
- › The applicability of **blockchain technology** in food chains, with a focus on food safety and sustainability





DEPARTMENT OF APPLIED SUSTAINABILITY

EDUCATION

- › Auditing in energetics
- › Engineering communication skills
- › Ecology
- › Geology
- › Nature conservation
- › Air protection
- › Soil protection
- › Water protection
- › Environmental management
- › Environmental assessment and management
- › Noise and vibration control
- › Environmental analysis and measurements
- › Health and environment
- › Environmental state evaluation
- › Biology
- › Waste and resource management
- › Environmental energetics
- › Immission mapping

STUDY PROGRAMS

- › BSc Environmental Engineering
- › MSc ESG- environmental, social and governance specialist
- › Specialist Course Hydrogen Systems Specialist
- › Specialist Course Hydrogen Systems Engineer
- › Specialist Course Energy Loss Investigation Auditor Specialist Engineer



RESEARCH AREAS

- › Hydrogen economy, the environmental effects of hydrogen technology
- › **Whole Life Cycle Analysis** (LCA)
 - › Sustainable energy systems
 - › **Circular economy**
- › Environmental effects of asbestos building materials
- › Environmental, Social, and Governance (**ESG**)
 - Sustainable Development Goals (**SDG**)
- › **Development of artificial intelligence-based environmental indicator system**





DEPARTMENT OF ANIMAL SCIENCES

EDUCATION

- › Zoology, Animal husbandry
- › Small animal breeding
- › Fisheries and fish farming
- › Animal physiology
- › Animal nutrition
- › Precision livestock farming
- › Housing technology
- › Genetics
- › Horse breeding
- › Animal hygiene
- › Animal health
- › Breeding organization
- › Veterinary epidemiology

STUDY PROGRAMS

- › Higher-level Vocational Training Stud Farmer
- › BSc Animal Husbandry Engineer
- › MSc Animal Husbandry Engineer
- › PhD Program Animal Science
- › Specialist Course Precision Livestock Farming and Animal Nutrition Specialist



RESEARCH AREAS

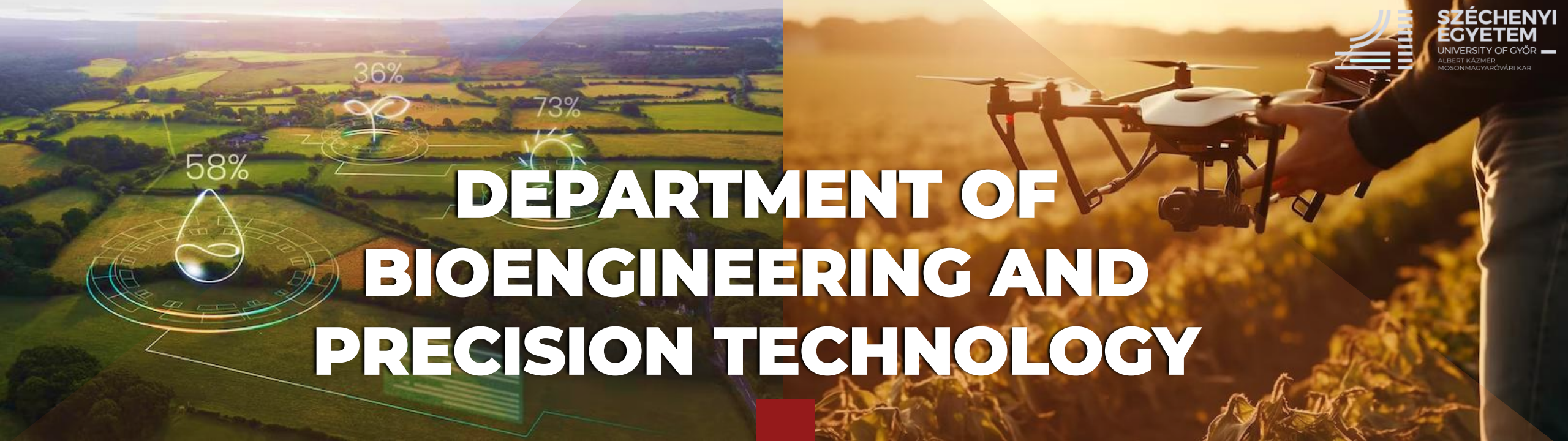
- › Trait improvement of Hungarian horse breeds. Development of breeding soundness examination and performance testing.
- › **Animal genotyping**, gene expression studies.
- › Prevalence of **ecto- and endoparasites** of domestic and wild animals.
- › Genetic conservation of Hungarian yellow chicken.





RESEARCH AREAS

- › Optimization of the nutrient supply of high producing livestock in a **digitalized production environment**.
- › **Nutritional evaluation of novel feedstuffs** and innovative feed management technologies **under model conditions**.
- › Improvement of nutrient management of farm animals.
- › Analysis and application of **real-time data** in the breeding programs of dairy cattle breeds.
- › Our **cannulated cattle unit** (with 4 cows) has already been completed.
- › Our **modern pig and poultry model barn** is currently under construction at the Smart Farm.
- › The facility will be equipped with **sensors, camera systems, IoT devices, and advanced technological units** for demonstration and research purposes.



DEPARTMENT OF BIOENGINEERING AND PRECISION TECHNOLOGY

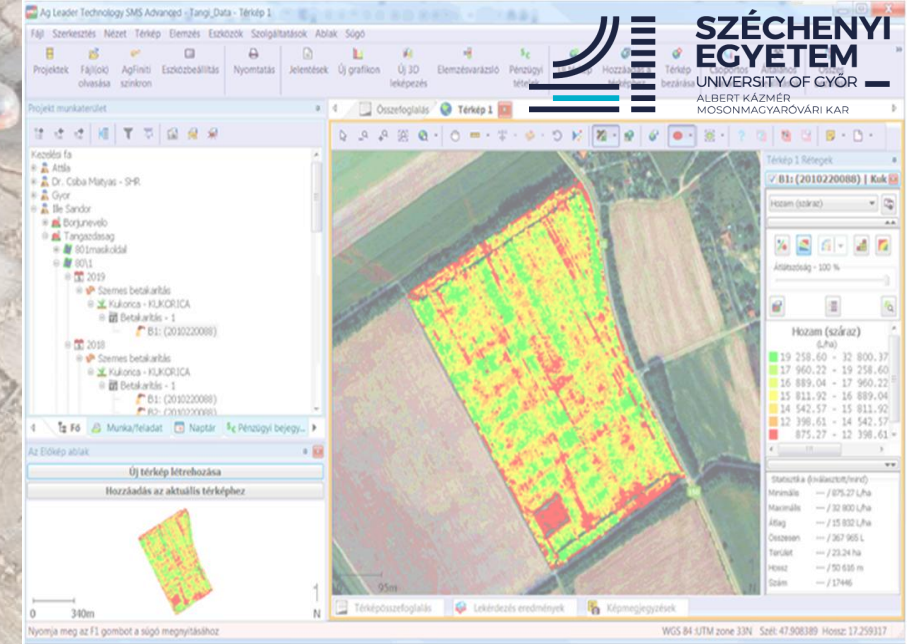
EDUCATION

- › Physics
- › Information technology
- › Power machines
- › Machinery for crop production
- › Machinery for animal production
- › Geomatics
- › Drone flight training
- › Image processing
- › Hyperspectral imaging and data analysis
- › Basics of the technical design of drones
- › Industrial and agricultural applications of UAS systems
- › Equipment in food industry
- › General technical knowledge
- › Energy management
- › Building service engineering

STUDY PROGRAMS

- › BSc Agricultural and Food Engineering
- › MSc Master in Agricultural Engineer (Agronomy) undivided
- › Specialist Course Drone Controller and Data Analyzer
- › Specialist Course Drone Technology Engineer/Specialist





RESEARCH AREAS

- › UAVs (Drones)
- › Food unit operations
- › Remote sensing
- › Ag. robotics
- › Artificial intelligence

- › Agricultural digitalization
- › IoT and sensors
- › Big-data processing
- › Bio-reactor design



DEPARTMENT OF FOOD SCIENCE

EDUCATION

- › Fundamentals of food processing and technology
- › Food technology
- › Fundamentals of nutrition
- › Food testing methods
- › Food quality assurance
- › Physical chemistry and food chemistry
- › Food toxicology
- › Food analytics
- › Microbiology

STUDY PROGRAMS

- › BSc Food Engineer
- › MSc Food Safety and Quality Engineer
- › PhD Program Food Science



RESEARCH AREAS

- › Development of functional dairy products
 - › Production of fermented foods
 - › Utilization of medicinal and aromatic plants in food production
 - › Food safety research projects
 - › Development and analysis of food products for consumers with special dietary needs
 - › Food industry digitalization – developments and solutions
 - › Development and optimization of food analytical methods
 - › Product development research
-





SERVICES

- › Analytical testing for food and feed
 - › Microbiological analyses
 - › Sensory evaluation of food
 - › Texture profile analysis
- › Production of semihard cheeses
 - › Fruit processing
 - › Grain and flour analyses
- › Quantitative determination of THC, THCA, CBD, and CBDA in cannabis samples





LABORATORIES & PILOT-SCALE PLANTS



Microbiology laboratory
(BSL-2)

Grain testing
laboratory

Food texture analyzing and food
sensory laboratories

Analytical laboratory for food and
feed analyses

Pilot-scale fruit
processing plant

Pilot-scale milk
processing plant
(HU-1663)

Apátúr Sörház – Craft Brewery



PROJECTS



CFD – Climate Farm Demo

A EUROPEAN-WIDE
NETWORK OF PILOT
FARMERS IMPLEMENTING
AND DEMONSTRATING
CLIMATE SMART
SOLUTIONS FOR A
CARBON NEUTRAL
EUROPE



Trans4num –

TRANSFORMATION
FOR SUSTAINABLE
NUTRIENT SUPPLY
AND MANAGEMENT



CSA – ClimateSmartAdvisors

CONNECTING AND
MOBILIZING THE EU
AGRICULTURAL ADVISORY
COMMUNITY TO SUPPORT
THE TRANSITION TO
CLIMATE SMART FARMING



CODECS –

MAXIMISING THE CO-
BENEFITS OF
AGRICULTURAL
DIGITALISATION THROUGH
CONDUCTIVE DIGITAL
ECOSYSTEMS



i2connect –

CONNECTING ADVISERS
TO BOOST INTERACTIVE
INNOVATION IN
AGRICULTURE AND
FORESTRY



DEPARTMENT OF FOOD BIOTECHNOLOGY

**INDUSTRIAL
COLLABORATIONS**

RESEARCH

EDUCATION

**INNOVATION
SERVICES**

RESEARCH AREAS

- › Enzyme technology research.
- › Microbiology-oriented research.
- › Investigation of postbiotics.
- › Development of fermentation processes.
- › In vitro model studies.



INDUSTRIAL PROJECTS

- › Establishing effective collaborations with industry partners.
 - › Novel fermentation procedure.
 - › Tailor-made processing solutions.
- › Innovative food preservation technologies..

UPCOMING PROGRAMS

- › Practice-oriented, profession-specific training programs.
- › BSc and MSc programs in Bioengineering and Biotechnology.
- › Micro-credentials and innovation workshops.



INNOVATION SERVICES

- › Development of biotechnology-derived functional foods
 - › Bioactivity testing.
 - › Support for market launch.
- › Development of novel technologies..

CURRENT RESEARCH FIELDS

› Precision/Direct Fermentation

Targeted biosynthesis of specific bioactive compounds (antioxidants, proteins, lipids).

› Next-Generation Probiotics

Precision probiotics: optimization of microbial strains through metagenomic and metabolomic analysis.

› Waste-to-food bioprocessing: Supporting the Circular Bioeconomy

Biotechnological valorization of by-products.

› Postbiotic Production

Bioactive metabolites and cell-lysis-derived components.

› Targeted Development of Functional Foods

Integration of modern food technology and biotechnology.

› Mycelium-Based Food Research

Exploiting the physiological advantages of filamentous fungi in food development.

› 3D Food Printing and Plant Cell Culture Applications

Production of foods with controllable composition and texture.

› Artificial Intelligence in Food Biotechnology

Prediction of molecular effects, functionality, physiological benefits and even sensory perception.



DEPARTMENT OF PLANT SCIENCES

EDUCATION

- › Soil science, Pedology
- › Plant protection zoology
- › Crop production
- › Plant physiology
- › Plant biotechnology
- › Horticulture
- › Plant pathology
- › Herbology

STUDY PROGRAMS

- › Higher-level Vocational Training Agricultural Assistant
- › BSc Agricultural Engineer (English, Hungarian)
- › MSc Plant Doctor
- › MSc Agricultural Biotechnologist
- › PhD Program Plant Science
- › Specialist Course Plant Protection Engineer



RESEARCH AREAS

- › Pedology Unit
- › Plant Biology Unit
- › Horticultural Unit
- › Crop Production Unit
- › Plant Protection Unit

HUN-REN-SZE PHATOPLANT-LAB RESEARCH GROUP

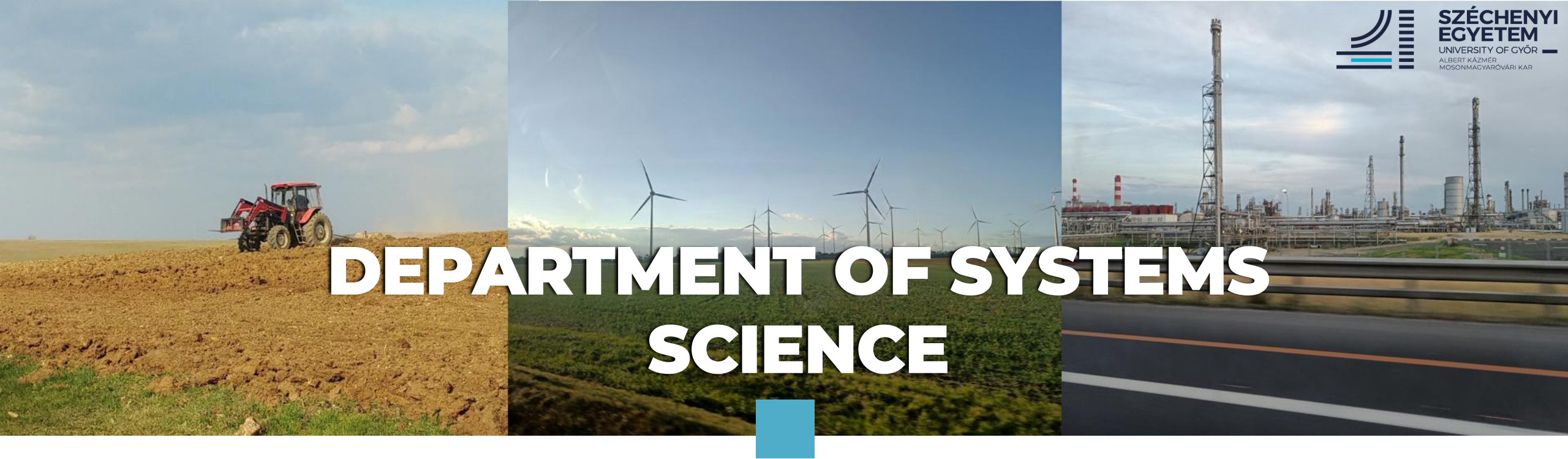
- › Development of an **integrated, environmentally friendly crop protection technology** adapted to climate change
- › **Virus diagnostics** using new generation sequencing technology (NGS)
 - › Field application of a **natural compounds**
- › Development of technologies that can be applied directly in fields



FIELD EXPERIMENTS (SMALL PLOT)

- › Plant nutrition
- › Winter wheat variety post-registration experiment
- › **Plant treatments with natural substances**
- › Precision crop production





DEPARTMENT OF SYSTEMS SCIENCE

EDUCATION

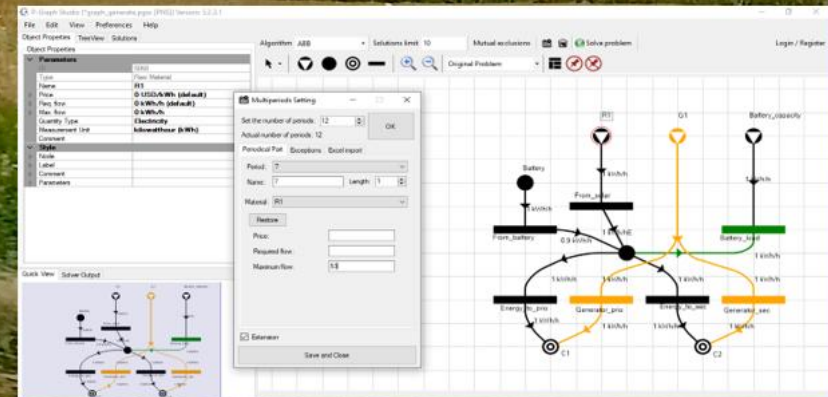
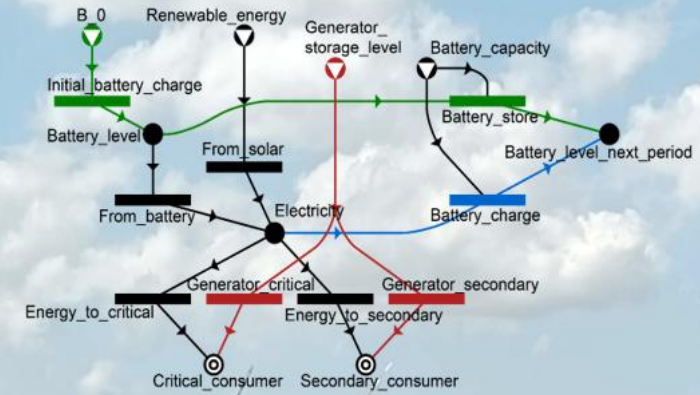
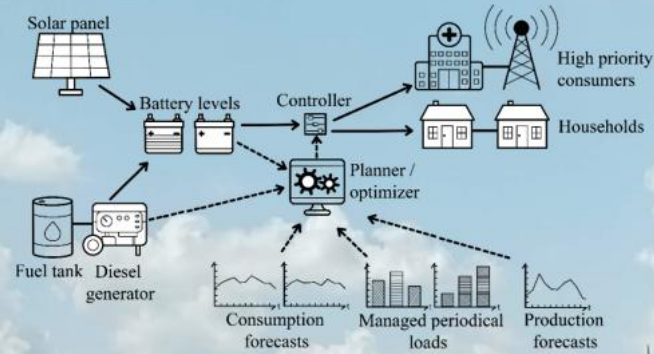
- › Business process modeling
- › Data modeling
- › Database design
- › Formal languages and automata
- › Object oriented design
- › Optimization software
- › Process synthesis
- › System design and development

TALENT DEVELOPMENT

- › BSc project and diploma supervision
- › MSc diploma supervision
- › Mentoring scientific student research
- › PhD supervision

RESEARCH AREAS

- › Process Network Synthesis and Optimization
- › Supply System, Process, and System Design
- › Sustainability
- › Resiliency
- › Energy Integration
- › Scheduling and Resource Allocation
- › Data Assets
- › Human Resources
- › Renewable Resources
- › Technologies





DEPARTMENT OF REGIONAL SCIENCE AND RURAL DEVELOPMENT

EDUCATION

- › Spatial planning and programming
- › Integrated regional and rural development
- › Research methodology in social sciences
- › Rural policy and development
- › Regional and urban marketing
- › Urban planning and development
- › Regional economics
- › Regional policy
- › Urban ecology
- › Methodology of regional and environmental analysis
- › Community development
- › Spatial planning
- › Rural sociology

STUDY PROGRAMS

- › BSc Rural Development Engineering
- › MSc Rural Development Engineering
- › MSc Regional and Environmental Economic Studies (English, Hungarian)



RESEARCH AREAS

- › Regional and rural development
- › Spatial planning
- › Development policy
- › Regional governance
- › Functional urban areas
- › Cross border regions



RESEARCH PROJECTS



› **Insula Magna** – Szigetköz-Csallóköz – Cross border complex regional development project



› **Public service organisation** and governance in functional urban areas (FUA)



- › **Land registration and evaluation** in a complex resource-based approach



DEPARTMENT OF SOIL, WATER AND NATURAL SCIENCES

EDUCATION

- › Water management
- › Surveying and water management
- › Hydrometeorology
- › Hydrobiology and microbiology
- › Surface and groundwater resources and their exploitation
- › Water regulation, water policy, hydrology
- › Agrometeorology
- › Precision water management
- › Wetland management
- › Ecology of environmental elements
- › Renewable energy
- › Flood protection and water damage management
- › Organic and inorganic chemistry
- › Botany, zoology

STUDY PROGRAMS

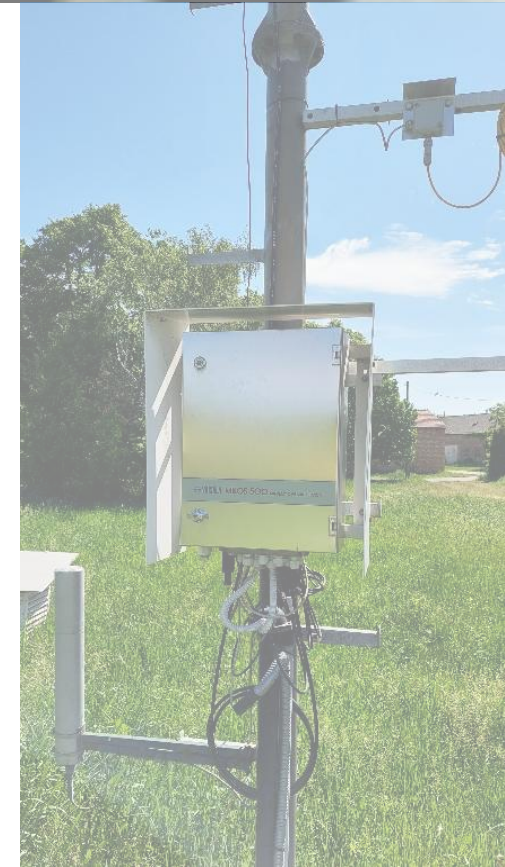
- › BSc Agricultural Water Management and Environmental Engineer
- › MSc Agricultural Engineer in Environmental Management
- › MSc Agricultural Water Management Engineer
- › Specialist Course Precision Agricultural Engineer
- › Specialist Course Precision Agricultural Adviser





RESEARCH AREAS

- › **Circular agriculture**, quality production
- › Waste recycling, composting
- › Creating decision supporting **environmental information system**
- › Research the connection between soil water, soil humidity, weather and land usage, irrigation researches
- › Testing and developing of **analytical and agronomical consultancy systems**; nutrient management
- › Effect of agrotechnical and abiotical factors on weed composition
- › **Agrometeorology**



AGRICULTURAL AND FOOD RESEARCH CENTRE (AÉKK)

The AÉKK aims at organising and implementing responsible and maintainable agricultural research activities.

RESEARCH AND BUSINESS ACTIVITIES

- › Generation, preparation and development of national and international-funded projects.
- › Project management of **research and development, scientific and innovation projects.**
- › **Coordination of agricultural and food laboratory services** at Széchenyi István University, Albert Kázmér Faculty of Agricultural and Food Sciences (SZE-AKMK).
- › Talent management.
- › Strengthening the educational and communication activities of SZE-AKMK.



AGRICULTURAL AND FOOD RESEARCH CENTRE (AÉKK)

RESEARCH ACTIVITIES



- › Development of precision and sustainable crop production, horticulture, animal husbandry and feeding practices, as well as **food industry technologies**.
- › Developing **sustainable crop production practices** with low carbon dioxide emissions.
- › **Applied reproductive biology** (embryo transfer, ET and Ovum Pick Up-OPU, In Vitro Embryo Production-IVP).
- › An extensive exploration of the advantages of ecological/organic farming.
- › Development and trial of **rapid testing methods** (e.g. NIRS) in agriculture.
- › **Automation, digitization, robotization** and the possibilities of using **artificial intelligence** (AI) in agriculture and the food industry.
- › Research activities related to **sustainable fish management** in natural waters.

NATIONAL AND INTERNATIONAL PROJECTS



AEDIH
Agricultural European
Digital Innovation Hub



NENUPHAR
NEW GOVERNANCE MODELS TO ENHANCE NUTRIENT
POLLUTION HANDLING AND NUTRIENTS RECYCLING



CLEANERS

**AEDIH –
Agricultural European Digital
Innovation Hub**

Project duration:

1/10/2022 – 30/9/2025

The primary goal of AEDIH is **to support the digital transformation** of agricultural producers and **the spread of digital solutions in agriculture**.

A secondary goal is the methodological and professional coaching of agricultural consultants for **data-based agricultural consulting**.

**NENUPHAR –
New governance models to enhance nutrient
pollution handling and nutrients recycling**

Project duration:

1/11/2023 – 31/05/2027

NENUPHAR aims to present new circular value chains targeting the utilization of nitrogen (N) and phosphorus (P) **from** three key waste streams at EU level: **animal waste, sludge and wastewater**.

**CLEANERS –
Research on sustainable crop production
practices with low carbon dioxide
emissions to mitigate environmental
deteriorations**

Project duration:

1/3/2022 – 1/3/2027

A CLEANERS célja **új, innovatív és fenntartható növénytermesztési gyakorlati keresése**, amely hozzájárul a növénytermesztés karbonlábnyomának csökkentéséhez.

NATIONAL AND INTERNATIONAL PROJECTS



NL –
National Laboratory of Infectious Animal
Diseases, Antimicrobial Resistance,
Veterinary Public Health and Food Chain
Safety

Project duration:

1/06/2022 – 25/2/2026

The purpose of NL is to investigate **the development of antibiotic resistance in veterinary medicine, and to propose protocols applicable** to certain diseases of certain animal species.

Production of vaccine-optimized
embryonated chicken eggs (VacOvo)
based on a new methodology with
breeding flocks with specific genetic
background

Project duration:

2024 – 2026

Project ID:

2023-1.1.1-PIACI_FÓKUSZ-2024-00046

Production of a Bábolna-Multicolor
(BMC) meat hybrid for premium
quality poultry meat with low
environmental impact

Project duration:

2025 – 2027

Project ID:

2024-1.1.1-KKV_FÓKUSZ-2024-00086

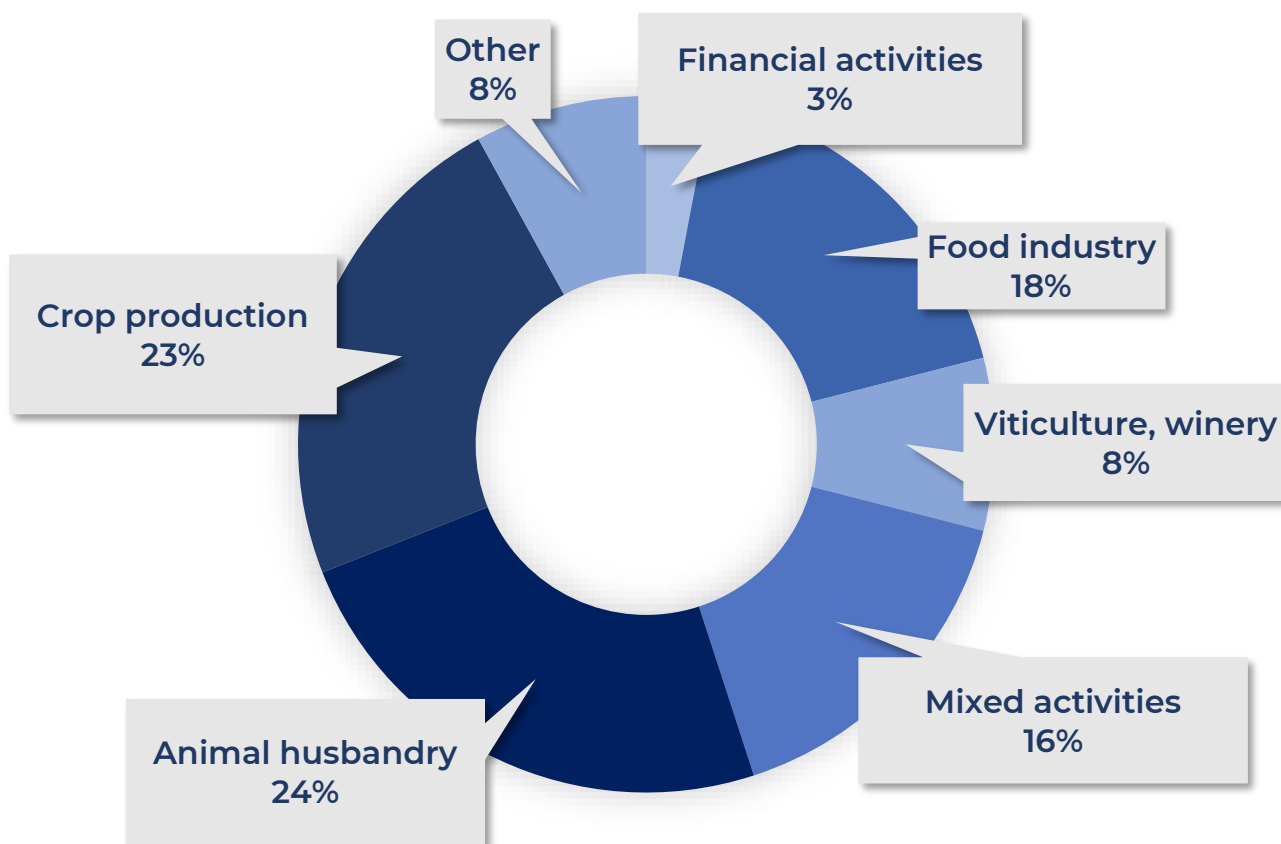
DEMONSTRATION FARMS NETWORK



BABCZI
SZŐLŐBIRTOK



BÁCOLNA
NEMZETI MÉNESBIRTOK



Lipóti Pékség



Raiffeisen
BANK



PANNONMAG



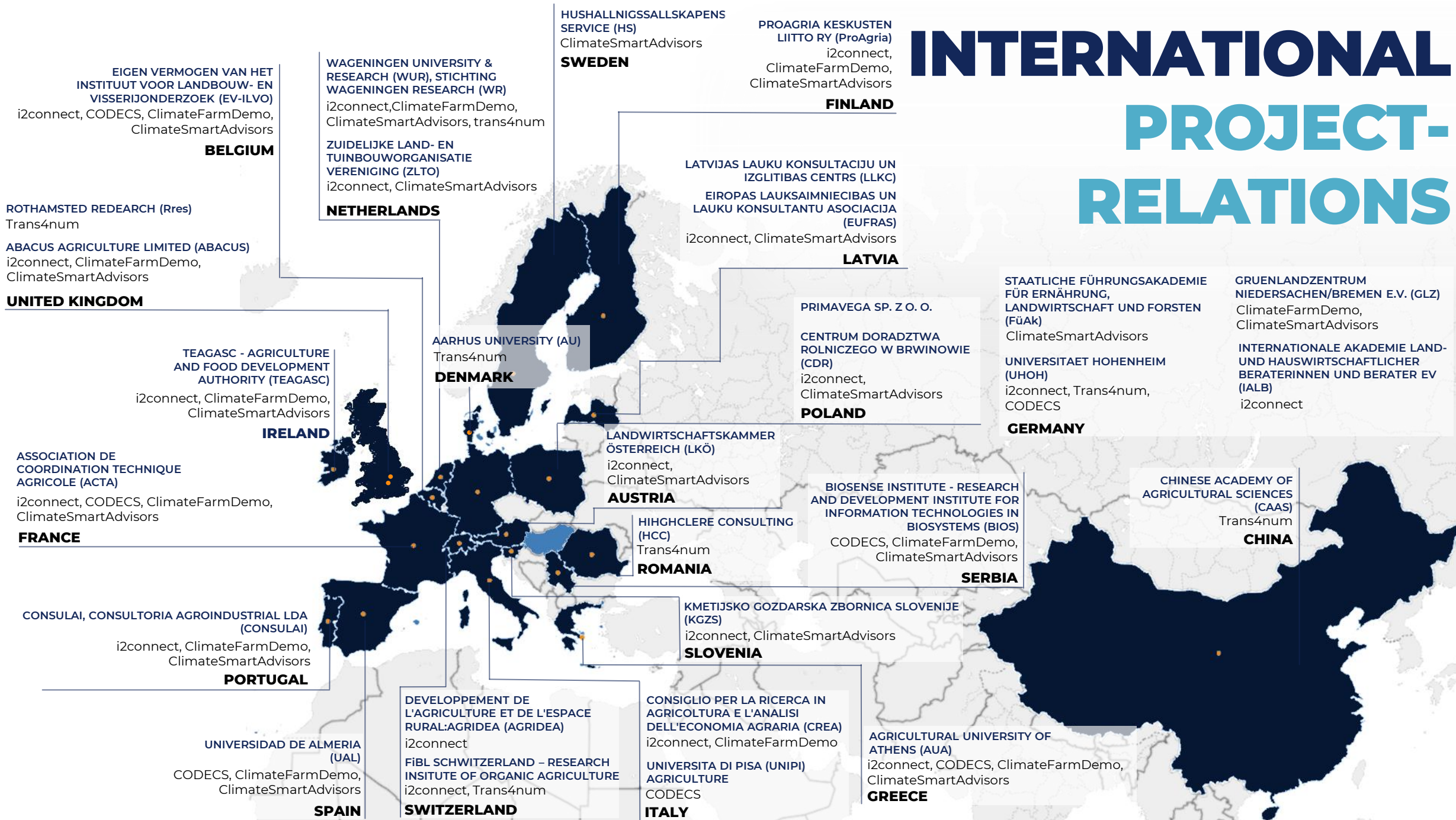
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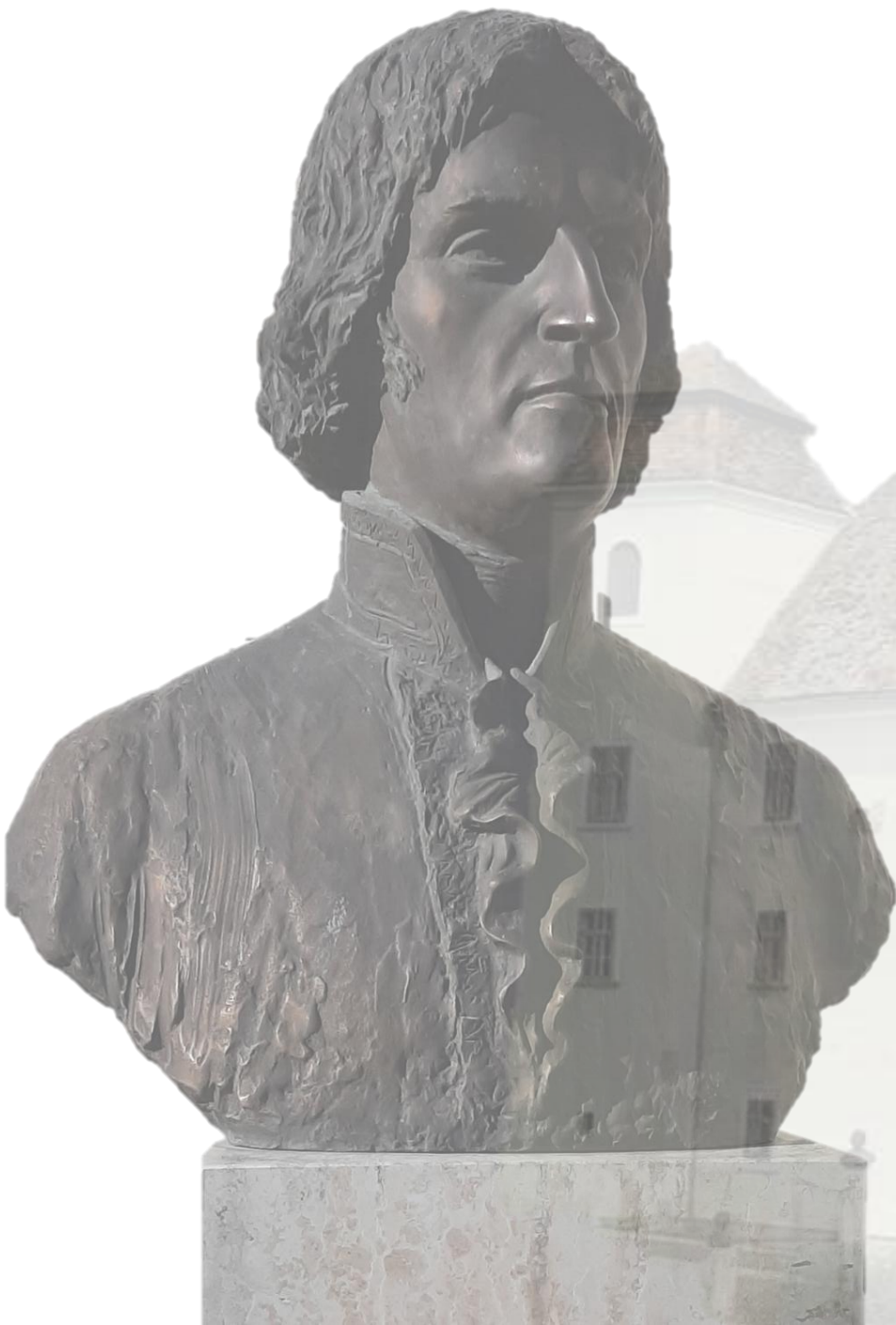


BUSINESS R+D CONTACTS

INTERNATIONAL PROJECT- RELATIONS





**THANK YOU
FOR YOUR KIND
ATTENTION!**