

OFFER
of the Institute of Technology and Life Sciences
- National Research Institute

Falenty, July 2025

GENERAL INFORMATION

The Institute of Technology and Life Sciences was established on January 1, 2010, pursuant to the regulation of the Minister of Agriculture and Rural Development, by merging the Institute for Building, Mechanization and Electrification of Agriculture (IBMER - established in 1948) with the Institute for Land Reclamation and Grassland Farming (IMUZ - established in 1953).

On April 10, 2021, it obtained the status of a national research institute.



The Headquarters of the Institute of Technology and Life Sciences - National Research Institute (ITP-PIB) is in Falenty.

Within its structure the Institute distinguishes:

- 14 research teams at the headquarters in Falenty and in branches in Bydgoszcz, Kłudzienko, Kraków, Poznań, Szczecin, Warszawa, Wrocław;
- the Experimental Plant in Biebrza with branches in Falenty and Poznań;
- the Products Certification Body;
- the Environmental Technologies Verification Body.

The ITP-PIB has 2 laboratories accredited by the Polish Accreditation Centre (accreditation no. AB116):

- the Research Laboratory of Agricultural Technologies and Biosystems;
- the Research Laboratory of Tractors and Agricultural Machinery.



The Institute employs 180 people,

including:

8 Professors, 12 with a post-doctoral degree (habilitated doctors) and 48 with a doctor degree (PhD).

PRIORITY RESEARCH PROJECTS

- **National Recovery and Resilience Plan:** Complex of Laboratories of the Institute of Technology and Life Sciences - National Research Institute - Research Laboratory of agricultural technologies and biosystems.
- **Horizon 2020 Framework Program:** Optimal strategies to retain and re-use water and nutrients in small agricultural catchments across different soil-climatic regions in Europe.
- **Horizon 2024 Framework Program:** Socio-economic and climate and environmental aspects of paludiculture.
- **Horizon 2024 Framework Program:** PALUdiculture DEMONstrations providing multi-actor approaches and recommendations towards large scale deployment in the EU.
- **Gospostrateg IX:** Digital support system for environmentally friendly agricultural production.
- **Interreg Baltic see region:** Tackling agricultural phosphorus load by soil amendments.
- **Programme: European Funds for Social Development 2021-2027:** Modern engineer for key industries.
- **Measure "Cooperation" under the 2014-2020 Rural Development Programme:**
 - Technique and technology for the renovation of grasslands using the wide-strip undersowing method in various soil and production conditions to produce feed.
 - Development of an innovative production of straws from straw for various beverages. 1st place in Poland in the competition "The most interesting innovative solutions in agriculture" in 2021.
 - Apiary based on controlled conditions and regulated microclimate in the hive and shaped production of nectar.

KEY ACHIEVEMENTS

- As part of **National Recovery and Resilience Plan:**
 - implementation of modern specialist research stations for the analysis of quality features of plant products with particular emphasis on energy and fertilization purposes,
 - research on animal welfare, which contributes to environmental protection and climate and ensuring sustainable agricultural production based on green energy,
 - unique research stations: dynamic olfactometry station dynamic olfactometry



station, coupled with a GC/MS chromatograph, gas emission testing station, microbiogas station, biomass testing station.

- **Innovative water circulation control system** for land improvement facilities – INOMEL – awarded the Gold Medal of Polagra – Premieres.
- **Portable water damming threshold** – prototype of a device for storing water and reusing it.
- **Manure storage with denitrification substrate** – a new method of storing manure, based on the use of a denitrification substrate isolated from the ground.
- **Technology for revitalizing small water reservoirs** – comprehensive technology for extracting sediments.
- **A set of devices for acidifying slurry** - automatic acidification of slurry in the tank to a given pH level - reducing nitrogen emissions from natural fertilizer in the form of ammonia.
- **Mobile container micro-biogas plant** - enables the management of all waste biomass and its conversion into useful energy and agricultural fertilizer.
- **Mixer-dryer** - the substrate obtained from the separation of raw slurry or after fermentation can be prepared for granulation by mixing the components and simultaneously drying to a moisture content below 17%.
- **A polygon complex of sites in the Mountain Research and Education Centre in Tylicz** for research, environmental education and implementation of individual (home) sewage treatment systems in rural areas.
- Contribution of ITP - PIB employees to the preparation of the study entitled: "**Adaptation of water management in agriculture to the changing climate**" and the brochure "**Water management in agriculture in the face of droughts**" - awarded by the Minister of Agriculture and Rural Development with diplomas and prizes.
- **Authorization to award the academic degree of doctor (PhD) and habilitated doctor (post-doctoral degree)** of agricultural sciences in the discipline of agriculture and horticulture; engineering and technical sciences in the discipline of environmental engineering, mining and energy. In the years 2020–2024, the Scientific Council of ITP-PIB conducted the procedures for obtaining academic degrees: 17 doctors and 3 habilitated doctors.
- **Homologation, standardization**, approval, control and verification, certification activities together with the maintenance of accredited laboratories, a certification body and a notified body.

KEY WORDS OF THE MAIN RESEARCH AREAS

Rural areas, rural landscape, environmental protection, water management, biodiversity, permanent grasslands, land improvement, small water structures, livestock buildings, micro-biogas plants, agroenergy, odour concentration, gas emissions, energy biomass, biomethane, agricultural machinery, agricultural technology.



MAIN DIRECTIONS OF SCIENTIFIC AND RESEARCH ACTIVITIES

Agroenergy, with particular emphasis on renewable energy sources

- Methods of obtaining energy from organic raw materials of agricultural origin, with particular emphasis on by-products and waste.
- Incorporating by-products and waste into a closed material cycle in accordance with the assumptions of the bioeconomy.
- Optimization of production technology, performing energy balance, calculating carbon footprint and life cycle analysis (LCA).

Protection of biodiversity and landscape of rural areas

- Study of the causes of deterioration of biodiversity in meadow and wetland areas.
- Assessment of the current state of biodiversity and rural landscape and search for methods to improve it.
- Search for possibilities of alternative use of peatlands after re-irrigation.

Protection of organic soils

- Protection of agriculturally used organic soils.
- Valorisation of agricultural production space in the context of threats, protection and possibilities of rebuilding organic carbon resources.
- Monitoring the condition of organic soils.

Water management in agriculture

- Natural conditions for the development of agricultural irrigation and drainage.
- Soil-ground, canal and reservoir water retention in rural areas.
- Renewal and modernization of land improvement devices and systems, including in areas of restored marshes.
- Precise water management methods in modernized land improvement systems.



Preventing deterioration of the quality of the environment because of odour, gas and dust emissions from agricultural sources

- Technologies for reducing emissions of ammonia, greenhouse gases and dust harmful to humans and the atmosphere, originating from agricultural production.
- Methods for reducing carbon dioxide emissions from meadows and wetlands.
- Methods for reducing odour emissions accompanying animal production.
- Structures of buildings and livestock structures and the organisation of animal production.

Meadow and pasture management

- Methods of renovating meadow communities located in different habitat conditions.
- Update of the principles of fertilizing grassland sward with mineral and organic fertilizers, including natural, digestates, sewage sludge and biofertilizers.
- Methods of harvesting and preserving feed from meadow sward.

Protection of water quality in rural areas

- Recognition of the state of water pollution in grassland areas with components dispersed in the agricultural production process, in particular nitrogen and phosphorus compounds.
- Diagnosis of the type and degree of threat to water quality.
- Prevention of water pollution from agricultural sources.

Technical solutions for plant and animal production

- Improving soil cultivation techniques to reduce greenhouse gas emissions.
- Supporting digital transformation in agriculture, including the development of autonomous machine groups.
- Improving permanent grassland renovation systems.
- Improving animal husbandry systems to reduce greenhouse gas emissions from livestock buildings.

Utility and safety of agricultural machinery

- Safety of autonomous machinery operation.
- Ergonomic arrangement of control elements in agricultural machinery and tractors.
- Machine and robot security systems.



Issues of mountain and foothill areas

- Assessment of the implementation of support instruments for the Strategic Plan for the Common Agricultural Policy 2023-2027.
- Recognition of the state of biodiversity.
- Recognition of the state of avifauna, including large ones in retention reservoirs.
- Rationalization of water management and protection of water quality.
- Development of a strategy for the sustainable operation of large dam reservoirs in the Sudety Foreland.
- Analysis of changes in the use of natural and production space in mountain and foothill areas.
- Selection of best practices improving soil structure and limiting erosion processes.



PUBLICATIONS OF THE INSTITUTE

- Journal of Water and Land Development – quarterly, English, online (Open Access); the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) License 4.0 – 100 points according to the list of scientific journals and peer-reviewed materials from international conferences of the Minister of Science and Higher Education.
- Monographs (Polish, English) – 80 points according to the list of publishing houses of the Minister of Science and Higher Education.
- Other publications, e.g. instructional materials, information materials, educational notebooks.

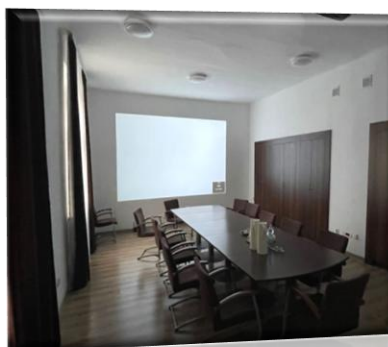


COMMERCIAL SERVICE OFFER

- Accredited tests, including homologation tests, of the safety of tractors and agricultural machinery and machinery for animal production.
- Accredited tests:
 - odorometric tests; odour concentration using the olfactometric method,
 - concentration of gases, suspended dust,
 - emission of dust and gas pollutants,
 - biogas efficiency from substrates,
 - selection of inputs for agricultural biogas plants,
 - composition of biomass as input for biogas plants,
 - technological parameters of biogas installations.



- Fertilizer Opinions and National Technical Assessments.
- Microbiological tests of water, sewage, sewage sludge, soils and plants.
- Innovative solutions in the use and protection of:
 - biomass resources for renewable energy production,
 - permanent grasslands,
 - biological and landscape diversity.
- Publishing, library, training, dissemination services, conference room rental, film services.



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