Report on Social Responsibility

of the University of Agriculture in Krakow
2020–2022

UNIVERSITY OF AGRICULTURE
IN KRAKOW

DEKLARACJA SPOŁECZNEJ ODPOWIEDZIALNOŚCI UCZELNI

WYDAWNICTWO UNIWERSYTETU ROLNICZEGO W KRAKOWIE

Krakow 2022

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Introduction. University of Agriculture in Krakow as a socially responsible university

University social responsibility (USR) is understood as a strategic and systemic approach to university management and building cooperation and dialogue with stakeholders that contributes to:

- sustainable development,
- shaping the values and attitudes of a civil society,
- supporting academic values and creating new ideas,
- sustaining and developing scientific and teaching competences that affect business efficiency and innovation.

This is the definition developed by the Working Group on University Social Responsibility under the Ministry of Development Funds and Regional Policy.

The basic principles of the USR are contained in the **Declaration of University Social Responsibility**, which is an expression of the voluntary commitment of universities to promote sustainability and social responsibility in the educational programmes, research and management and organisational activities of universities. The aim of the Declaration is to create broad public awareness of the role of universities in shaping the conditions for sustainable socio-economic development in the country. The Declaration consists of twelve principles.

Agricultural College. Photo: G. Wojcieszek

Declaration of University Social Development

The university's special role as a place for creating and transmitting knowledge about the surrounding reality obliges it to take into account and apply the principles of social responsibility in all areas of its activity and to disseminate these principles among its stakeholders.

Bearing in mind the good of higher education in Poland, conscious of our role in implementing the principles of sustainable development, ensuring high quality research and education and nurturing the comprehensive development of the academic community, we pledge to:

1. Nurture the academic values written down, among others, in the *Code of Ethics for Academic Staff*, in particular: conscientiousness, objectivity, independence, openness and transparency.
2. Shape the social and civic attitudes of future elites that foster building a community, creativity, openness and communication, as well as social sensitivity and a working culture.
3. Promote equality, diversity, tolerance, and respect and protect human rights for the whole academic community and its environment.
4. Expand education programmes to include issues of ethics and corporate social responsibility, sustainability and social innovation.
5. Carry out projects implementing the principles of social responsibility, in particular regarding diversity management in the workplace, employee volunteering, promotion of ethics, inter-sectoral cooperation, socially engaged marketing.
6. Undertake research and implementation work that, in partnership with other academic centres from around the world, the business sector, public administration and non-governmental organisations, can contribute to solving important social issues.
7. Develop inter-university, national and international cooperation enabling the adaptation and strengthening of best practices in university social responsibility.
8. Nurture the university's organisational structure, basing the university's management on the foundations of social responsibility, both in the strategic documents and in the resulting activities for the comprehensive development of the academic community and the effective implementation of the university's mission.
9. Ensure the transparency of the activities carried out by the university by measuring results, promoting and disseminating outputs and identifying the person or team coordinating these activities, among others.
10. Conduct activities in such a way as to minimise the negative impact of the activities carried out by the academic community and its stakeholders on the natural environment in all its dimensions.
11. Engage in dialogue with stakeholders on the priorities of the university's social responsibility policy and communicate the results.
12. Be guided by principles of ethics and responsibility in the teaching and research process in order to provide stakeholders with optimal conditions for benefiting from the university's knowledge, intellectual capital and achievements.

Ministry of Development Funds and Regional Policy **Ministry of Education and Science**

Food Technology Department Building. Photo: G. Wojcieszek

The implementation of the USR principles is voluntarily undertaken by institutions and goes beyond the legal obligations. The University of Agriculture in Krakow (URK) was one of the first universities in Poland to join the signatories of the Declaration in 2017.

In its activities, the URK draws on the heritage and tradition of the Jagiellonian University, where the teaching of agriculture at university level began in 1890. The first idea to provide education in agriculture in Krakow was taken up as early as 1776 by Father Hugo Kołłątaj - the university's patron, one of the founders of the Commission of National Education, and a great reformer of the Krakow Academy - when he introduced a postulate for the establishment of a Department of Agriculture into the reform project of the Crown School.

The University of Agriculture in Krakow is a public academic university carrying out specialised research and educational activity covering the agricultural, food, forestry and environmental protection and shaping sectors. The university develops and disseminates knowledge, creates innovations that foster the achievement of food security and climate neutrality, enhancing the competitiveness of the economy based on biological materials and processes, allowing to take up social and civilisation challenges. The University of Agriculture fulfils the basic tasks of developing knowledge, raising the scientific level of employees, as well as educating academic staff and students with respect for academic values, in the spirit of responsibility for the ideas of humanism, freedom, tolerance, respect for ethical standards and creating attitudes of openness to people, knowledge and the world (**University Mission**).

The URK pursues the concept of a socially responsible university as an organisation serving the environment through **research and teaching**. The university's agricultural profile requires environmental and sustainability issues to be taken into account in these activities. The opening up of the URK's community: authorities, employees, students, to the external environment through **economic cooperation with the social and economic environment** (including domestic and foreign universities, local government institutions, entrepreneurs, non-governmental organisations), as well as concern for the environment

through the promotion and shaping of social and civic values and attitudes, and support for academic values is an expression of commitment to the university's third mission.

Numerous **inventions** resulting from research projects at the URK serve to improve food quality and human health. For example, innovative technologies involving biostimulation of plants were developed and applied in the spin-off company Hugo Green Solutions Sp. z o.o., based on two solutions: Hugo - Growth Stimulator and Hugo - Agricultural Robot. They constitute solutions for organic crop protection, for which the University of Agriculture, together with its spin-off company Hugo Green Solutions Sp. z o.o., was recognised at the 2021 **Polish Product of the Future Contest** by the Polish Agency for Enterprise Development.

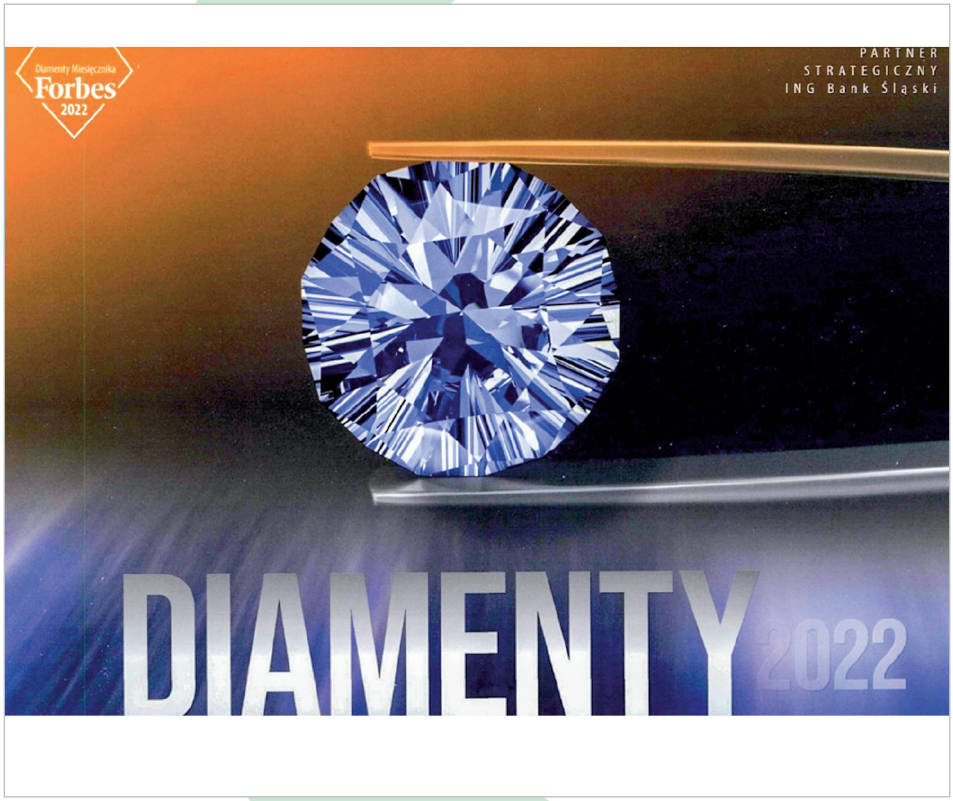
Authors of the award-winning project titled "Hogweed – a microwave device for destroying invasive plants" (from the left: dr hab. inż. Krzysztof Słowiński, prof. URK, dr hab. inż. Sylwester Tabor, prof. URK, dr inż. Barbara Grygierzec) together with the Director of the National Centre for Research and Development [NCBR] and the President of the Polish Agency for Enterprise Development [PARP], during the ceremony of the 25th Polish Product of the Future Contest. Photo: K. Stańczak

The URK's Technology Transfer Centre and Academic Business Incubator provide assistance in acquiring projects by academic staff for research to support modern industries that are part of Industry 4.0, including **Agriculture 4.0** and **hydrogen technologies**.

The university's strength is its collaboration with the business sector. At the regular 'Breakfast with an Entrepreneur' meetings, people from academia and business practice have the opportunity to share their experiences, and the discussions serve to promote entrepreneurship and adapt education programmes to current market needs. The university's laboratories, equipped with state-of-the-art instrumentation, provide a guarantee of world-class quality in their analyses. More than PLN 20,000 per employee per year is spent on the renewal of instrumentation and fixed assets.

In 2022, the University of Agriculture was listed among the Forbes Diamonds. The list features companies that have increased their value the fastest in the last three years. URK was ranked 122nd in the Małopolskie region.

The initiatives undertaken are in line with the concept of the university social responsibility. URK actively participates in local events, such as the Innovation Demo Day and the Green Smart City Forum. The Innovation Demo Day is organised by five universities in Krakow: AGH University of Science and Technology, Krakow University of Technology, University of Economics, Jagiellonian University and University of Agriculture. These are face-to-face meetings with inventors as part of the "Innovation Incubator" Programme. The second event, the Green Smart City Forum, unites local authorities, universities, environmental funds, NGOs, entrepreneurs and residents interested in smart technologies for Smart City and Smart Village.



University of Agriculture listed among the Forbes Diamonds 2022. Photo: I. Majewska

Increasing the efficiency of knowledge and technology transfer to the business world, the creation of innovative solutions and products at our University has a positive impact on its development, as well as on many areas of life in Krakow, the Małopolskie region, the whole country and Europe.

The slogan "NatURally the best" perfectly reflects the potential of the University of Agriculture, and you can only gain by cooperating with the university.

The University of Agriculture in Krakow is made up of the following **Faculties**:

- Faculty of Agriculture and Economics,
- Faculty of Forestry,
- Faculty of Animal Science,
- Faculty of Environmental Engineering and Land Surveying,
- Faculty of Biotechnology and Horticulture,
- Faculty of Production and Power Engineering,
- Faculty of Food Technology,
- University Centre of Veterinary Medicine UJ-URK.

Agricultural College The seat of the authorities of the University and the Faculty of Agriculture and Economics. Photo: G. Wojcieszek

Jubilee Building. Seat of the Faculty of Animal Science. Photo: URK Archive

Building at al. 29 Listopada 54. Seat of the Faculty of Biotechnology and Horticulture.
Photo: G. Wojcieszek

Building at ul. Balicka 122. Seat of the Faculty of Food Technology. Photo: G. Wojcieszek

Building at al. 29 Listopada 46. Seat of the Faculty of Forestry. Photo: G. Wojcieszek

1. Social activities

1.1. Social activities as part of internal responsibility

The University of Agriculture in Krakow (URK) is committed to the professional development of its employees in various areas, pursuing the postulate of **diversity management in the workplace**. This is done by organising training courses with different profiles. Between 2020 and 2022, **50 courses and training sessions** were held at the URK, attended by **981 people** from both administrative and academic staff. The courses were delivered as part of **three projects co-financed by the European Union** under the Knowledge, Education, Development Operational Programme:

- Integrated Programme of the University of Agriculture in Krakow,
- University Sustainable Development,
- Innovative Programme for the University's Strategic Development.

The training programmes covered the following:

- adaptation of teaching materials to the needs of people with disabilities,
- professional ethics,
- facilitation,
- filming (audio-visual material editing and post-production),
- distance learning methodologies (including legal and technical aspects),
- operation of MS Office, MS Project and specialised computer software and systems (editing, graphics), as well as the URK's internal systems,
- social media course,
- R&D specialist course,
- preparing people working in dean's offices to serve people with disabilities,
- language courses,
- the art of presentation,
- management (PRINCE 2).

Promoting the international mobility of staff to develop cooperation with foreign research centres

URK employees can count on scientific mobility through travel and internship programmes abroad and at home. In 2020, 7 individual trips abroad and 1 internship at a Polish institution were registered. A year later, 26 people went on foreign internships, and in 2022, as many as **218 trips abroad** were registered.

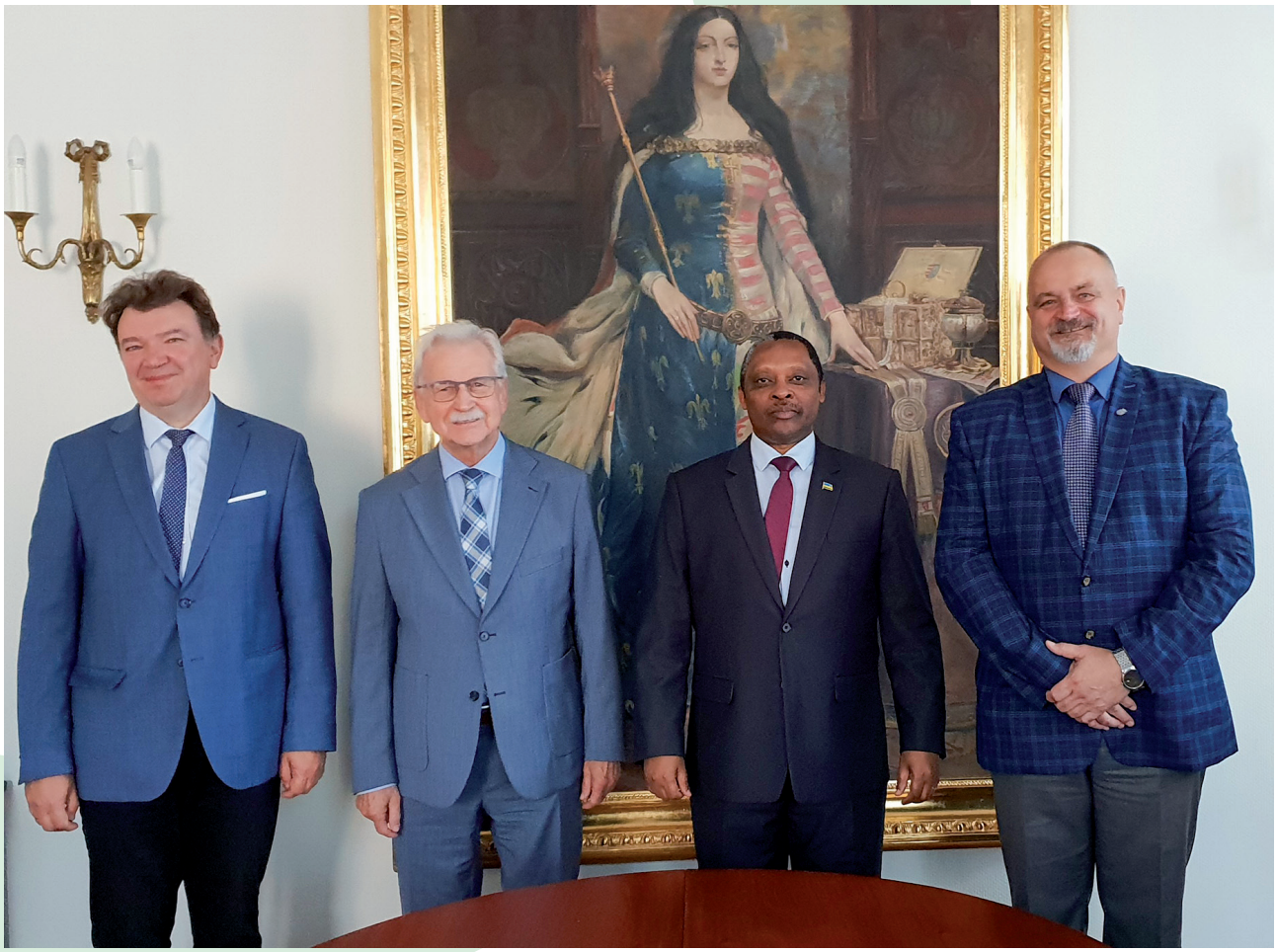
URK relies primarily on **long-term research stays** for its employees. The tool that enables covering the costs of stays abroad is the previously mentioned **Integrated Programme of the University of Agriculture in Krakow**. Thanks to its measures, **27 people**

went on three-month internships between 2020 and 2021, and in 2022 almost twice as many workers, i.e. **52**, benefited from one-month internships.

Equally important are the **arrivals of foreign scientists and academics**. In 2022, 101 people from research centres on different continents were teaching and doing research at the URK under seven international and national programmes.

Maintaining international relations by the URK

In the development of the URK, **visits by representatives of institutions and scientific associations and ministries from abroad**, enabling international adaptation and scientific partnerships, are also important in addition to internship departures and arrivals. In 2020, the URK hosted people from 11 and in 2021 from 29 countries, from various institutions and scientific associations, as well as representatives from ministries. The visitors represented various countries from Europe (e.g. neighbouring countries, Croatia, Finland, Luxembourg, Italy, the UK), Asia (Kazakhstan, Turkey, Tajikistan, Uzbekistan), Africa (Ethiopia) and the Americas (Brazil, Colombia and the USA). In the years covered by the report, we hosted a total of **250 people**.



Visit of the Rwandan ambassador to the University of Agriculture in Krakow. Photo: I. Majewska

URK's international relations in 2020–2022

- International employee mobility: 79 long-term internships in foreign research centres.
- The URK's use of opportunities provided by national and international programmes supporting the mobility of academic staff from abroad: 101 stays at the URK under CEEPUS, NAWA, Erasmus+ and others.
- 250 visits foreign institution and scientific association and ministry representatives to the URK..

NAWA training participants, October 2022. Photo: URK Archive

Equality, diversity, tolerance, ethics (I) – Equalising students' social opportunities

The URK eliminates social inequalities among its students through social scholarships, places in dormitories and individual targeted funding and aid grants. In 2020-2022, **1,800 scholarships** and **294 other forms of financial aid** (grants) were awarded to students. In 2022 alone, the total amount of grants was PLN 195,300. **2,359 people** have stayed at dormitories in the period 2020-2022. Financially struggling URK students don't have to rely on employment alone thanks to material and housing assistance. In turn, living in a dormitory while studying means students have lower accommodation costs compared to renting a room on the open market, which is very expensive in Krakow. Thus, equalising the social opportunities of young people by influencing their budget creates better conditions for them to study effectively at the URK.

Material aid for students

- 1,800 social scholarships for the poorest URK students and nearly 300 accepted grant applications in 2020–2022,
- 1,530 available spaces in URK dormitories each year, the vast majority of which are used by students.

URK dormitories at al. 29 Listopada. Photo: G. Wojcieszek

Equality, diversity, tolerance, ethics (II) - caring for people with special needs and disabilities, and psychological support for staff and students

The URK provides conditions for people with special needs, including people with disabilities, to participate fully in the life of the University and the academic community, from the recruitment process to education and research. This includes participation in cultural and sporting events and employment. Architectural barriers are being removed by adapting building entrances and residential inventories in dormitories and research units, and other measures are being taken in this area. The implementation of these activities is handled by: The Office for Persons with Disabilities (BON URK, https://bon.urk.edu.pl/o_nas.html and the **Administrative Centre for URK Projects Support** as part of the Programme to Increase Accessibility of the University of Agriculture in Krakow, co-funded by the European Union as part of the Operational Programme Knowledge, Education, Development.

In 2022, 13 initiatives were taken up to remove architectural and other barriers, and support people with special needs, including:

- equipping URK units with portable induction loops for people who use hearing aids,
- equipping the rooms available to people with disabilities in the "Bratniak" dormitory with specialised evacuation mattresses in the event of a health or life-threatening situation,
- equipping URK faculty buildings with evacuation chairs designed to provide safe transport means for people with disabilities in the event of a health or life-threatening situation,
- purchasing ergonomic chairs adapted for people with disabilities for the education room at the URK e-Learning Centre,
- entering into a cooperation agreement between the URK and the Krakow University of Economics to conduct a joint study on the situation of Krakow university students and graduates with disabilities, concerning their aspirations and professional plans, functioning on the labour market and the possibilities and conditions of pursuing a professional career,
- organising participation in awareness and competence-building training for university staff on accessibility issues at the university and the organisation of optimal educational conditions for applicants and students, taking into account people with special needs,
- co-organisation of the 14th Krakow Integration Days, which included training for decision-makers and all those involved or interested in implementing accessibility at universities,
- oenology course for pupils of the Centre for the Blind and Partially Sighted in Krakow,
- classes for children with the autism spectrum disorder (Department of Horticulture at the Faculty of Biotechnology and Horticulture) and many other initiatives.

Any URK student with a disability certificate or equivalent document is entitled to a scholarship - **additional material aid designed to compensate for opportunities** (https://bon.urk.edu.pl/index/site/8336).

The **purchase of apps and licences** for educational and teaching **software** has been planned to support students with temporary or permanent disabilities. They will enable, for example, remote NASA satellite observations, preparing analyses and summaries based on farm or forest area data. The **e-lab environment will be personalised** for each student and will allow them to work at their individual pace on mandated assignments, and the type of software and applications will depend on the URK faculty. An important part of these activities is the **implementation of virtual reality (VR) systems**, which has taken place at the University Centre for Veterinary Medicine UJ-URK (https://pionier.tv/wideo/czas-nauki/rozszerzona-rzeczywistosc-w-medycynie-weterynaryjnej/).

Psychological support for staff and students is provided by a qualified psychologist through weekly in-patient consultations (https://urk.edu.pl/index/site/7821).

The URK is also home to the **Academic Careers Office**, which supports the future choices and career paths of students and graduates, as well as the **Academic Business Incubator**.

"Bratniak" dormitory. Photo: G. Wojcieszek

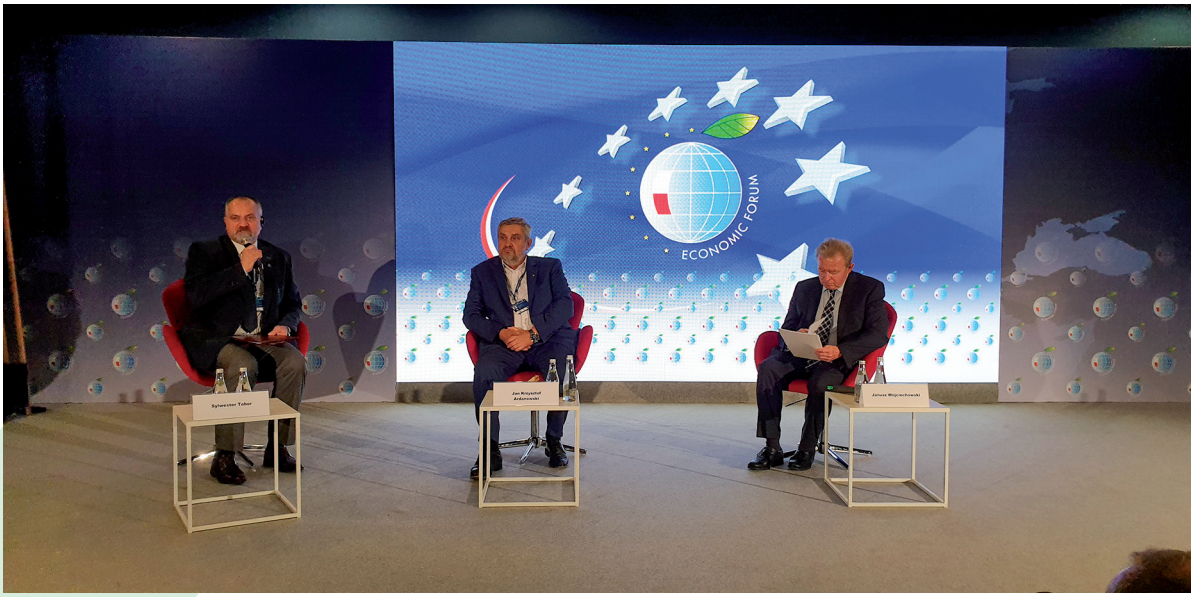
1.2. External social responsibility of the URK

The URK staff is shaping public opinion

The academic community, through its **frequent participation in radio and television programmes and broadcasts**, as well as **social media activity** (Facebook, Twitter, Instagram, LinkedIn), has a significant impact on shaping public opinion and knowledge about agriculture in its broadest sense, and its role and importance in the national and global economy. In 2020, the university staff participated or were interviewed in radio and TV programmes a total of 60 times (86 in 2021 and 16 in 2022). An example of this is the regular participation of the URK Rector, dr hab. inż. Sylwester Tabor, prof. URK, in the *Rector's Hour* broadcast on Radio Kraków (https://www.radiokrakow.pl/audycje/godziny-rektorskie/).

The activity of the URK Rector's College, manifested in cooperation with administrative and state authorities and in the activities of numerous working and advisory bodies, at conferences and in debates in the broader Polish university community, is also highly visible. These activities demonstrate the significant role of our University in shaping and developing opinions of national importance. There were 104 such meetings in 2020

and 258 in 2021. In 2020, URK staff participated in five (11 in 2021 and 41 in 2022) different types of **external and international project and opinion teams** in the field of agriculture and rural areas, including those at the ministry and the state territorial administration. The implemented projects have had a significant impact on, among others, the **development of norms in the European Union**. A total of seven people are members of scientific committees, including the chairperson and deputy chairperson of one of the committees, at the Polish Academy of Sciences.



30th Economic Forum in Karpacz, 7-9 September 2021. The debate on the future of agriculture was chaired by the Rector dr hab. inż. Sylwester Tabor, prof. URK, and attended by Jan Krzysztof Ardanowski (Chairman of the Council for Agriculture and Rural Areas to the President of the Republic of Poland) and Janusz Wojciechowski (EU Commissioner for Agriculture). Photo: Sz. Sikorski

13th Conference "Waste Management. Legal and Systemic Aspects", Krakow, 27–28 September 2022. Photo: Sz. Sikorski

The URK supports culture and the arts and the protection of historical monuments

The authorities of our University and the academic community have participated in numerous meetings commemorating history and disseminating culture. There were seven such meetings in 2020 and 26 in 2021. The cultural activity of the University of Agriculture is mainly manifested in the activity of the "Arka" and "Buda" **academic clubs**. Their activity is not only aimed at the academic community, but are also available to the residents of Krakow. Their activity included the organisation of a total of 56 cultural events in 2020, 24 in 2021 and 33 in 2022.

Inter-Faculty Art Tournament in 2021. Photo: A. Bogdał

Travel Meetings at the Student Cultural Centre (2022), "Arka" Academic Club. Photo: A. Szanduła

Cabaret Review at the "Arka" Academic Club. Photo: A. Szanduła

These included music concerts, film nights and dance parties. The activity of the URK Academic Choir and the Skalni folk band (https://skalni.urk.edu.pl/), as well as the Hagard Hunting Signallers Band (https://hagard.urk.edu.pl/), thanks to their numerous concerts and performances, is also a recognisable and visible cultural showcase of our University in the academic and cultural environment of Krakow, Poland and beyond.

URK Academic Choir. Photo: URK Archive

A performance by the Skalni band. Photo: G. Wojcieszek

70th Anniversary of the Skalni band, 5 November 2022. Photo: A. Mróz

Hagard Hunting Signallers band during the Festival of Science and Arts. Photo: G. Wojcieszek

The URK actively cares for its historic infrastructure, keeping it in a very good state of repair and allowing the public access to it. Examples include the manor house in Mydlniki (https://ck.urk.edu.pl/index/site/6323), Garlicki Lamus – a farmstead in Garlica Murowana (https://winnica.urk.edu.pl/), and the former greenhouse Pojnarówka at al. Mickiewicza 21, now an art café that brings together staff and students of the university, the people of Krakow and tourists visiting Krakow (https://tinyurl.com/2p4m3d86).

The URK academic community co-organises and participates in **social and charitable** campaigns and events, such as the Noble Gift, DKMS bone marrow donors, blood donations, Fields of Hope, supporting animals and shelters, helping Ukraine/Ukrainians affected by the war (collections of clothing, food, medicines, sleeping bags, etc.), the "500 sandwiches for refugees" campaign lasting several weeks - students and staff were preparing sandwiches and fed refugees at the railway station and outside the consulate; SOS Campaign – Universities for Shelters and numerous topical workshops, fairs and markets. In total, 10 such events were reported in 2020, 10 in 2021 and 20 in 2022.

URK manor house in Mydlniki. Photo: URK Archive

Pojnarówka – historic greenhouse, now an art café. Photo: URK Archive

Grapes from the university vineyard – Garlicki Lamus. Photo: URK Archive

Good practices in the area of the URK's social responsibility

1. Continuous development of the professional competences of employees is carried out through continuous training and promotion of international mobility within the framework of innovative programmes with different profiles (e.g. Integrated Programme of the University of Agriculture in Krakow), financed by national and international development programmes.
2. Caring for people with special needs, including disabilities, providing psychological support to URK staff and students, made possible through the use of national and international funding sources, as well as workshops and demonstrations for school children with disabilities and autism spectrum disorders.
3. Continuous readiness to actively participate and engage in social projects and initiatives resulting from emerging social needs of both a continuous/permanent nature (e.g. care farms in rural development in the face of demographic challenges (GROWiD project), Noble Gift, DKMS campaign, SOS Campaign – Universities for Shelters) and a temporary/occasional nature (e.g. assistance to war-affected Ukrainian citizens).
4. Caring for and preserving historic buildings and their public accessibility, ensuring that the URK is integrated into local communities.
5. Maintaining adequate funding to ensure the activity of the Arka and Buda academic clubs, as well as the Skalni folk band, the Academic Choir and the URK Hagard Hunting Signallers Band.
6. Promoting initiatives and research that have direct practical application, e.g. in animal husbandry with regard to animal welfare, in environmental protection against the impact of invasive plants, in proper human nutrition, etc.
7. Ensuring that the URK makes information on emissions, energy and water consumption and real concern for the natural and social environment widely available.

2. Educational activities

I and II degree studies

Currently (as of 2022), there are just under 7,000 students at the University of Agriculture in Krakow, of which approximately **60% are women**. The highest prevalence is in II degree full-time studies (71%), with the fewest women students in I degree part-time studies (40%). Among the courses of study chosen by women, the Faculty of Animal Science is by far the most studied (84%), followed by: University Centre for Veterinary Medicine (81%), Faculty of Food Technology (79%) and Faculty of Biotechnology and Horticulture (75%). The smallest number of female students can be found at the Faculty of Forestry – they make up around 32% of all students. Around 1.5% of all students are people with disabilities. Furthermore, there are over 300 students on post-graduate courses at the University of Agriculture, of which just over half are women; there are currently no students with disabilities on post-graduate courses.

There are currently around **150 international students** studying at the University of Agriculture, **half of whom are women**. There are no people with disabilities among international students.

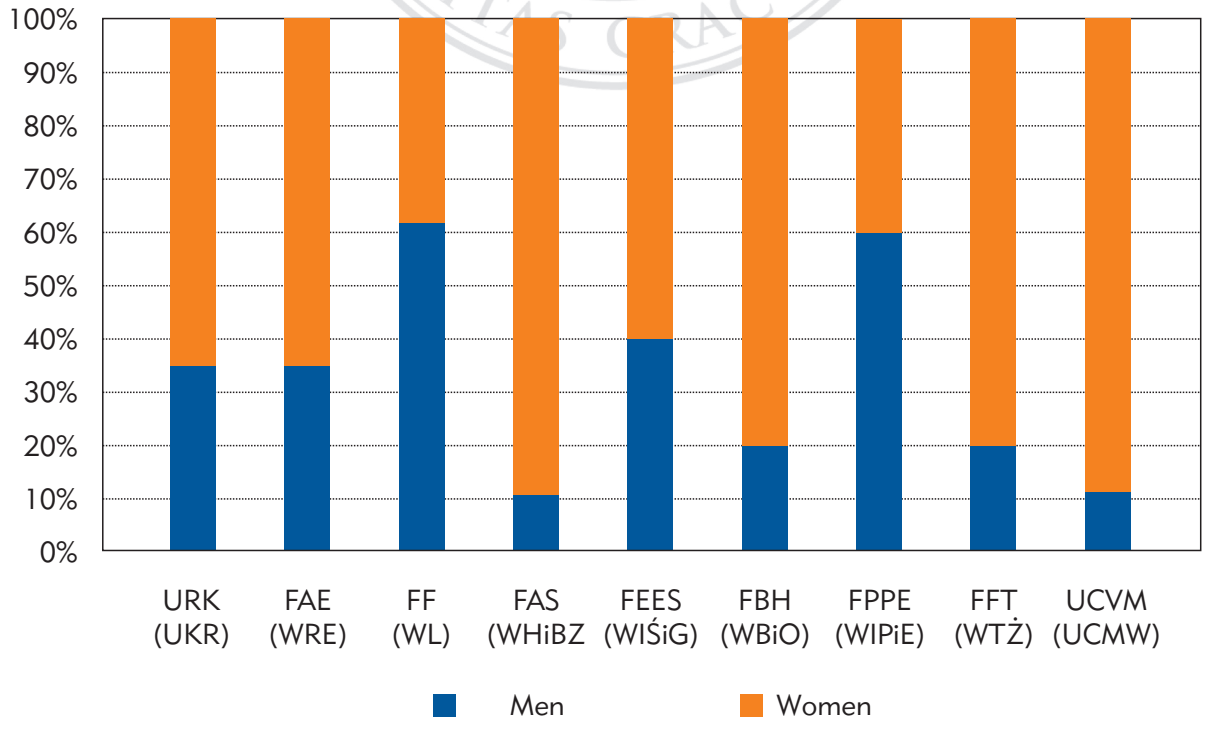


Fig. 2.1. Percentage distribution of women and men in I and II degree full-time and part-time studies

At the University of Agriculture in Krakow (as of 2021), the students could choose from **29 I degree full-time studies and 23 II degree full-time studies, as well as one long-cycle Master's degree course (veterinary medicine).** In terms of part-time studies, the students have a choice of 14 courses in I and II degree studies. Four courses taught to foreigners in English are also available.

Compared to 2021, I degree full-time students had 28 courses to choose from, while 26 courses were available as II degree full-time studies, as well as one course in long-cycle Master's studies (veterinary medicine). In terms of part-time studies, the students have a choice of 17 courses in I and II degree studies. **Four courses taught to foreigners (in English)** were also available.

Table 2.1. Courses of study at the University of Agriculture in Krakow in 2020–2022

Number of courses									
Parameter	**Year**	**FAE**	**FF**	**FAS**	**FEES**	**FBH**	**FPPE**	**FFT**	**UCVM**
I degree full-time studies	2022	5	1	4	5	6	4	3	1*
	2021	5	1	4	5	5	5	4	1*
	2020	5	1	3	5	4	4	4	1*
II degree full-time studies	2022	6	1	4	5	5	3	2	–
	2021	4	1	3	4	5	4	2	–
	2020	5	1	3	5	5	3	3	–
I degree part-time studies	2022	5	1	1	3	2	4	1	–
	2021	4	1	1	2	2	3	1	–
	2020	4	1	1	2	2	3	1	–
II degree part-time studies	2022	5	1	1	3	2	3	2	–
	2021	4	1	1	3	2	3	2	–
	2020	4	1	1	3	1	2	2	–
Courses (total) for foreigners in English	2022	1	–	–	–	2	–	1	–
	2021	1	–	–	–	2	–	1	–
	2020	1	–	–	–	2	–	–	–

* long-cycle Master's studies

Source: Data obtained from the URK's Education Division

Field exercises by students of the Faculty of Forestry. Photo: B. Wertz

III degree studies

The University of Agriculture in Krakow features a Doctoral School, which trains students from both Poland and abroad. **The total number of students in the Doctoral School was 96** (as of 2022), **including 26 foreigners**. The largest number of doctoral students carry out their research in the disciplines of food and nutrition technology (27, including 8 foreigners) and forest sciences (24, including 8 foreigners).

Laboratory exercises by students of the Faculty of Agriculture and Economics. Photo: M. Dacko

Students of the Faculty of Production and Power Engineering. Photo: M. Pawińska

Field exercises by students of the Faculty of Forestry. Photo: B. Wertz

Students of the Faculty of Forestry. Photo: B. Wertz

Table 2.2. Number of participants of the Doctoral School at the University of Agriculture in Krakow by scientific discipline (as of 2022)

Discipline	Polish participants	Foreign participants
Economics and finances	2	–
Land engineering, land surveying and transport	1	–
Mechanical engineering	5	2
Environmental engineering, mining and power engineering	6	2
Forest sciences	16	8
Agriculture and horticulture	9	5
Food and nutrition technology	19	8
Animal science and fishery	12	1

Source: Internal data of the URK

Activities aimed at combining issues from different scientific disciplines in education

The University features **17** courses of study which are assigned to different academic disciplines (Table 2.3). The leading discipline among 7 of the aforementioned courses is agriculture and horticulture, and mechanical engineering for a further three. The remaining seven interdisciplinary courses have other leading disciplines: biological sciences, animal science and fishery, environmental engineering, mining and energy engineering, land engineering, land surveying and transport, food and nutrition technology and veterinary medicine.

The latest course of study to be launched for the 2022/2023 academic year is **Bioinformatics and Data Analytics**. The course is aimed at those with a particular interest in biology, mathematics, programming and the use of computer tools. Graduates of this course will have the competences to undertake work in units dealing with the processing of data of biological origin using mathematical methods and IT tools.

In the years under review, new courses were launched, such as Bioinformatics and Data Analytics, Mechatronics Engineering or Veterinary Medicine with a practical profile, and others.

Post-graduate studies and courses at the URK - responding to the demand for specialists in the labour market and the country's economy

The URK organises post-graduate studies and training courses as a direct response to labour market demands for specialists and experts with the knowledge and competences to meet the challenges of modern agriculture and forestry in implementing the concept of sustainable agriculture and the Green Deal in the European Union.

In addition to the university's offerings, URK employees participate in non-university training and educational initiatives organised by other universities, research institutes and units, state and commercial institutions, which testifies to their high professional competence and qualifications. A total of 14 **post-graduate studies, training and courses** were held in 2022. Examples include the Piglet Production Academy (coordinated by Poznan University of Life Sciences), a specialty course for veterinarians, Specialty no. 3 Diseases of Pigs (coordinated by Warsaw University of Life Sciences), or webinars for allotment gardeners, post-graduate studies in response to the demands of the environment and surroundings (Oenologist – brewer at the Faculty of Food Technology), or studies at the request of the Sanitary and Epidemiological Station on the Safety of Food Supplements.

Internationalisation of the educational offer

The URK features many activities for the internationalisation of education, resulting in foreign students taking up studies, as well as Polish students going to universities abroad. **In 2022, 72 international students came to the URK through the Erasmus+ programme and 101 URK students went abroad, including 57 women.** Students came mainly to the Faculty of Biotechnology and Horticulture (26 students) and the Faculty of Agriculture and Economics (26 students). In 2021, **94 foreign students** studied at the URK, including 34 at the Faculty of Biotechnology and Horticulture (where the Environmental and Plant Biotechnology course is taught in English) and 29 at the Faculty of Agriculture and Economics. In 2021, 51 students, including 29 women, went to universities abroad under the Erasmus+ programme. In contrast, **52 foreign students** came to the URK in 2020, including 25 to the Faculty of Agriculture and Economics and 12 to the

Faculty of Food Technology. In 2020, 52 students, including 31 women, went to universities abroad under the Erasmus+ programme.

Table 2.3. Courses of study at the University of Agriculture in Krakow assigned to several disciplines

Faculty	Course of study	Education degree	Primary discipline	Share	Additional disciplines	Share
FBH	Biotechnology	I degree	Agriculture and horticulture	51%	Food and nutrition technology	21%
					Animal science and fishery	19%
					Biological sciences	9%
		II degree	Agriculture and horticulture	51%	Food and nutrition technology	21%
					Animal science and fishery	19%
					Biological sciences	9%
	Technology of medicinal and health-promoting plants	I degree	Agriculture and horticulture	91%	Food and nutrition technology	9%
		II degree	Agriculture and horticulture	88%	Food and nutrition technology	12%
	Viticulture and oenology	II degree	Agriculture and horticulture	88%	Food and nutrition technology	12%
	Bioinformatics and data analytics	I degree	Biological sciences	51%	Mathematics	33%
					Computer science and telecommunications	16%
	Environmental and Plant Biotechnology	II degree	Agriculture and horticulture	75%	Biological sciences	25%
FAS	Applied biology	I degree	Animal science and fishery	56%	Biological sciences	44%
		II degree	Animal science and fishery	54%	Biological sciences	46%
FPPE	Renewable energy sources and waste management	I degree	Mechanical engineering	64%	Environmental engineering, mining and power engineering	36%
		II degree	Mechanical engineering	61%	Environmental engineering, mining and power engineering	39%
	Transport and logistics	I degree	Mechanical engineering	92%	Management and quality sciences	8%
	Production management and engineering	I degree	Mechanical engineering	78%	Management and quality sciences	22%
		II degree	Mechanical engineering	83%	Management and quality sciences	17%

FEES	Landscape architecture	I degree	Environmental engineering, mining and power engineering	52%	Urban planning and architecture	27%
					Agriculture and horticulture	21%
		II degree	Environmental engineering, mining and power engineering	56%	Urban planning and architecture	28%
					Agriculture and horticulture	16%
	Land management	I degree	Land engineering, land surveying and transport	66%	Socio-economic geography and land management	23%
					Environmental engineering, mining and power engineering	11%
		II degree	Land engineering, land surveying and transport	66%	Socio-economic geography and land management	25%
					Environmental engineering, mining and power engineering	9%
FAE	Bio-economics	I degree	Agriculture and horticulture	82%	Environmental engineering, mining and power engineering	18%
	Environmental protection	I degree	Agriculture and horticulture	68%	Environmental engineering, mining and power engineering	32%
		II degree	Agriculture and horticulture	68%	Environmental engineering, mining and power engineering	32%
	Environmental quality and safety	II degree	Agriculture and horticulture	52%	Environmental engineering, mining and power engineering	48%
FFT	Dietetics	I degree	Food and nutrition technology	84%	Health sciences	16%
		II degree	Food and nutrition technology	94%	Health sciences	6%
	Food technology and human nutrition	I degree	Food and nutrition technology	90%	Health sciences	10%
UCVM	Veterinary medicine	Long-cycle Master's	Veterinary medicine	96%	Animal science and fishery	4%

Source: Resolution no. 85/2019 of the Senate of the University of Agriculture in Krakow dated 26 September 2019, as amended.

Measures to internationalise the URK's educational offer also include the creation of elective subjects in English. These subjects are taught in most of the University's faculties.

Orientation Week, Krynica-Zdrój, March 2021. Photo: M. Machura

Experts and practitioners in teaching

An important part of the teaching process is the participation of experts who can provide students with up-to-date knowledge from a practical and business perspective. The various Faculties of the URK are keen to draw on the expertise of practical professionals and invite them to teach or co-teach in all courses and degrees (Table 2.4). For example, in 2020, the number of experts and practitioners taking part in the teaching process was 96. The Department of Food Technology was a leader in this area, inviting 32 experts and practitioners. Looking at the 2021 figures, the number of experts teaching at the URK increased to 110, with the Faculty of Food Technology (40 people) remaining the leader in this respect. In turn, in 2022, the **number of experts was 110**, of which 40 were teaching at the Faculty of Food Technology.

Table 2.4. Experts and practitioners involved in the teaching process at the University of Agriculture

Year	FAE	FF	FAS	FEES	FBH	FPPE	FFT	UCVM
2020	16	8	9	12	9	–	32	10
2021	16	12	9	13	10	–	40	10
2022	20	12	1	12	10	5	40	10

Source: Internal data of the URK

Scientific activities of students

Students at the University of Agriculture can choose from **14 science clubs**, including more than two hundred active students. Students, especially those participating in science clubs, are actively involved in the university's scientific activity. This is evidenced by the numerous scientific publications and conference presentations co-authored by the students.

In 2020, **students co-authored** 77 scientific publications, the largest number of which were affiliated with the Faculty of Food Technology. Students also participated in scientific conferences: national – 29 presentations (most at the FEES) and 7 presentations at international conferences. In 2021, students were among the authors of 111 publications (most at the Faculty of Food Technology - 65), and were also participants in national (33 people) and international (11 people) science conferences. More than 50 students also had presentations at conferences designed for students, most from the Faculty of Biotechnology and Horticulture. Analysing the data for 2022, it can be seen that students co-authored 82 publications, 20 of which were affiliated with the Faculty of Agriculture and Economics. Students also had 60 presentations at national conferences, including 55 presentations at conferences dedicated to students and 36 presentations at international conferences.

3. Economic activities and cooperation

The economic activities of the University of Agriculture in Krakow are implemented based on the University's statutes. In addition, these activities are closely linked to the quality of education and teaching, commercialisation and technology transfer, and increased staff and student mobility. The effects of these activities have a positive impact on both the **URK's financial results and on cooperation** with national and international reach. It is also important to emphasise the University's stable financial position, which is the result of a well-developed and efficient system for raising funds from external sources of the public and private sectors, and based on proper management of the subsidy granted.

Table 3.1. Total gross salaries of URK employees in 2020-2022, as reported in the annual report (in PLN thousand)

	2020	2021	2022
Total	116 129,50	125 864,60	131 174,30

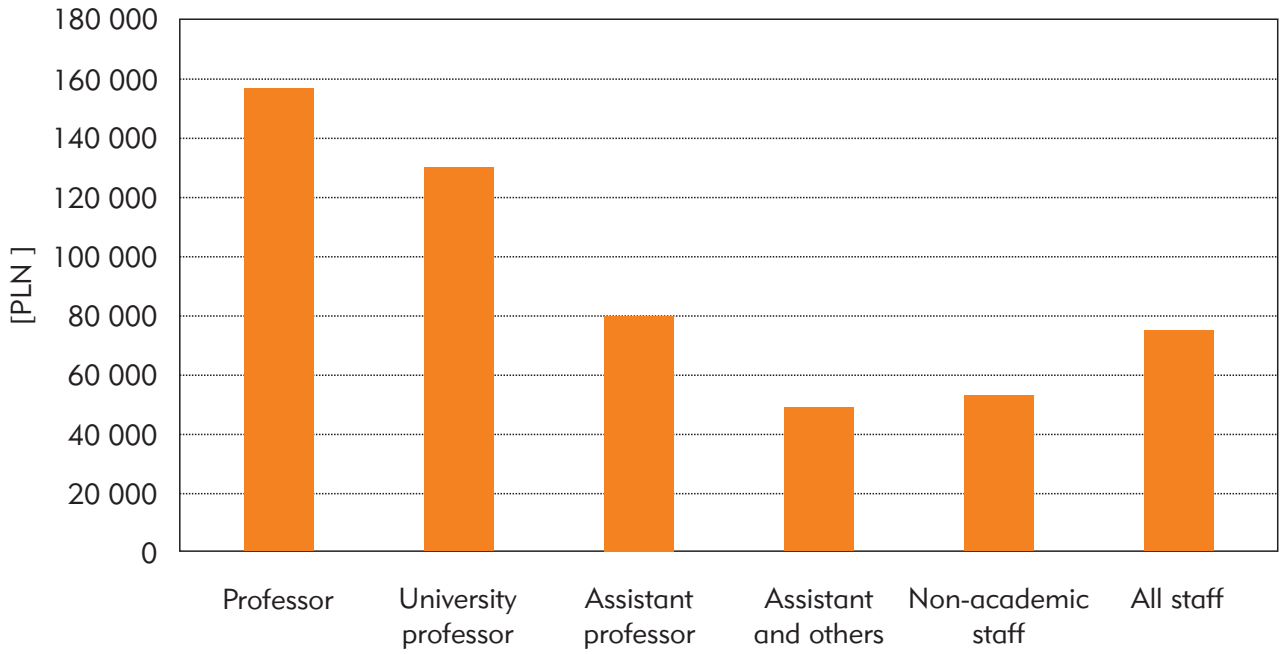


Fig. 3.1. Average annual salary in 2020 for the following positions: professor, university professor, assistant professor, assistant and other non-academic staff

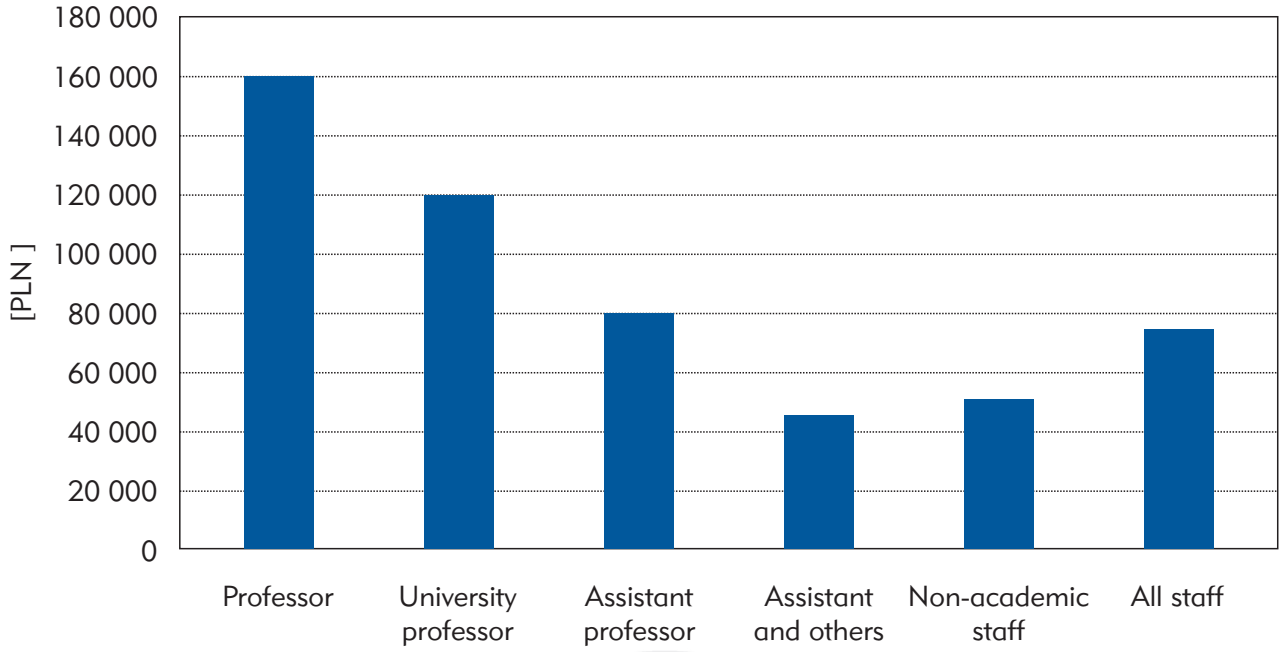


Fig. 3.2. Average annual salary in 2021 for the following positions: professor, university professor, assistant professor, assistant and other non-academic staff

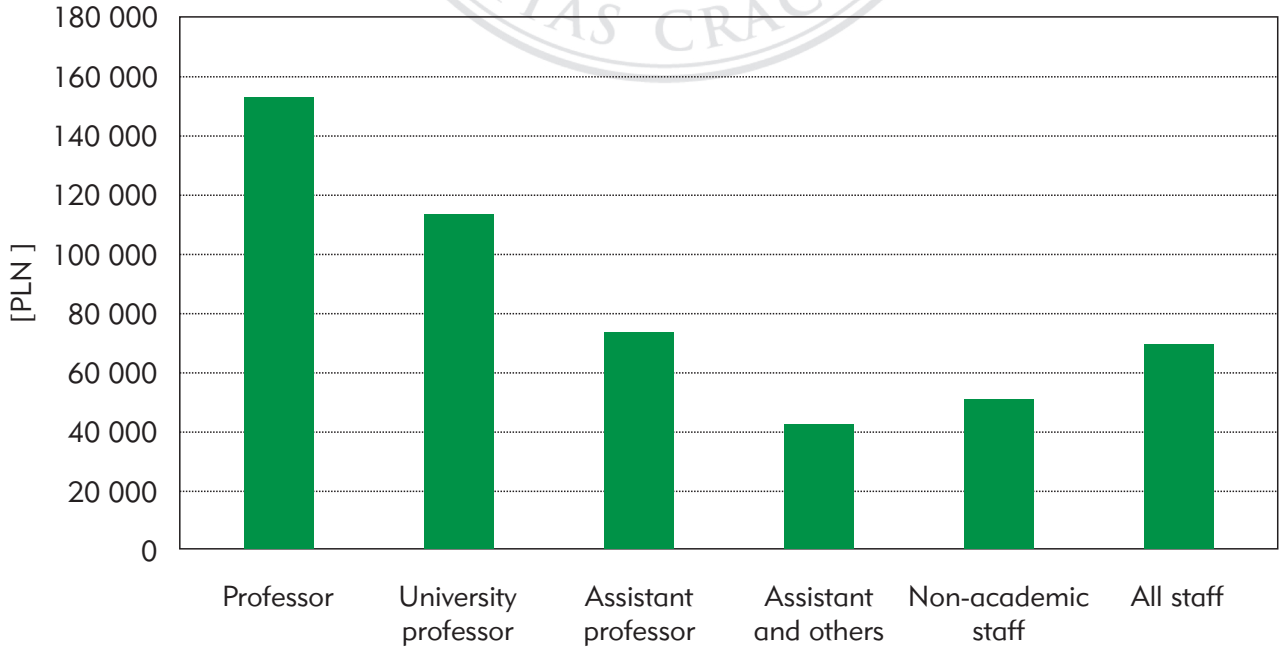


Fig. 3.3. Average annual salary in 2022 (11 months) for the following positions: professor, university professor, assistant professor, assistant and other non-academic staff

Financing of the University's activity from the Ministry of Education and Science

Table 3.2. Expenditure on research projects of the University of Agriculture for the period from 1 January 2020 to 30 September 2022 (PLN)

Type of funding for external projects	2020	2021	Until 30.09.2022	Total
Funding for projects financed by the National Centre for Research and Development	2,274,806.48	2,246,087.04	1,340,622.52	**5,861,516.04**
Funding for projects financed by the National Science Centre	3,406,071.85	2,997,461.68	3,059,295.27	**9,462,828.80**
Funding for the implementation of programmes or undertakings defined by the Minister of Education and Science	813,661.92	1,101,083.50	710,095.63	**2,624,841.05**
Funding for research cooperation with abroad	2,545,227.18	5,505,014.24	4,686,194.20	**12,736,435.62**
Other research projects (NAWA, ARiMR, NFOŚiGW)	411,611.59	2,909,712.62	1,964,246.56	**5,285,570.77**
Sale of other work, research and development services	6,325,016.22	4,830,430.50	4,181,974.64	**15,337,421.36**
Total	**15,776,395.24**	**19,589,789.58**	**15,942,428.82**	**51,308,613.64**

Prepared by: Robert Malaca

3.1. URK's agreements and understandings on cooperation – domestic cooperation

The University of Agriculture in Krakow **cooperates with business** on various levels. Examples include carrying out commissioned research for companies such as Dottrade Sp. z o.o. Sp. k., Scandia Cosmetics S.A., Replikant Sp. z o.o., Grupa Azoty S.A. in Tarnów, Amplus Sp. z o.o., Cardicare Sp. z o.o., Specjalistyczny Przedsiębiorstwo Górnicze Górtech Sp. z o.o., Ogólnopolskie Stowarzyszenie Wspierania Inicjatyw Nauka-Przemysł and many others. In total, since 2020, the University of Agriculture has concluded 38 agreements for commissioned research on research and development services for a total amount of PLN 9,486,303.47..

Table 3.3. Funding raised for research commissioned by the URK in 2020-2022 (as of 15 November 2022)

2020	PLN 6,922,373.52
2021	PLN 5,624,768.90
2022	PLN 8,084,471.61

An organisational unit of URK that is active in the commercialisation of research results is the **Technology Transfer Centre** (TTC). The task of the TTC is to implement the results of scientific and research work into industrial practice and to manage the licences and patent rights obtained by the University of Agriculture. The University patents the results of scientific work. In 2020, 11 patent applications were filed, including eight inventions and three utility models. In the same year, the Polish Patent Office granted a total of 23 patents to the URK. An increase in the number of patent applications has been recorded in 2021. Nineteen inventions and five utility models were filed with the Polish Patent Office, i.e. a total of 24 applications. In 2021, the Polish Patent Office granted 13 patents to the URK. The same year also saw 1 patent granted by the European Patent Office. The number of all invention patents and utility model and industrial design protection rights currently in force (as of 16 November 2022) is 73 (including 57 inventions, 15 utility models, 1 industrial design). The number of applications awaiting a decision from the Patent Office is 66.

The Technology Transfer Centre is responsible for the commercialisation of research results on behalf of the University. This is done by means of indirect commercialisation through a special-purpose vehicle (a *spin-off* company) and by means of direct commercialisation - through the sale of research results, development work or *know-how* related to these results, or by making them available for use, particularly based on a licence, rental or lease agreement. Recently, the University has sold an invention entitled "Device for obtaining test material to determine measures of the degree of soil skeleton weathering" (Polish Patent Office application number 401541) and licensed an invention entitled "Device for laser pre-sowing seed stimulation and method of laser pre-sowing seed stimulation" (Polish Patent Office application number P.430467).

The results of research and development work carried out by URK researchers are also subject to indirect commercialisation, which consists of the acquisition or purchase

of shares in companies in order to implement or prepare for the implementation of the results of scientific activity or the *know-how* related to these results. A special-purpose vehicle, Centrum Innowacji Uniwersytetu Rolniczego w Krakowie sp. z o. o., is responsible for indirect commercialisation at the URK (the University holds 100% of shares in the company). To date, two **spin-off companies** have been established:

- Green Lab Sp. z o.o.,
- Hugo Green Solutions Sp. z o.o.

The *spin-off* companies present good practices related to the establishment of such companies and promote new solutions intended for market implementation at national and international fairs or exhibitions.

Green Lab sp. z o.o. is a company established in 2014 by the URK's special-purpose vehicle – Centrum Innowacji Uniwersytetu Rolniczego w Krakowie Sp. z o.o. and 8 breeding and seed companies owned by the Agricultural Property Agency of the State Treasury. Currently, in addition to Centrum Innowacji Uniwersytetu Rolniczego w Krakowie Sp. z o.o., Green Lab Sp. z o.o. is owned by 40 companies under the National Support Centre for Agriculture [KOWR]. These are companies listed as strategic companies of the State Treasury, due to their scope of activity, primarily in the area of preservation and development of Polish plant cultivation and animal breeding. The company carries out joint ventures between KOWR companies, including in the area of purchasing production resources, such as fertilisers or fuel, and supports their promotional activities.

A spin-off company of the University of Agriculture – **Hugo Green Solutions Sp. z o.o.** – was established based on the "Hugo – innovative technology for pre-sowing seed irradiation and post-emergence plant irradiation", subsidised under Task 4 of the "**Innovation Incubator 2.0**" project. The company's founders include academics from the Faculty of Agriculture and Economics at the University of Agriculture, as well as the University's special-purpose vehicle, the Centrum Innowacji Uniwersytetu Rolniczego w Krakowie Sp. z o.o. Hugo Green Solutions Sp. z o.o. is a member of the Space Technologies Cluster. The Space Technologies Cluster works for the cooperation and promotion of the Polish space industry. The organisation was created at the initiative of EXATEL, a Polish telecommunications operator, and brings together leading players in the space sector. The Cluster consists of the most important national commercial companies (both private and state-owned companies, science and research organisations, representatives of the academic community and institutions from the space sector). The technology on which the company was founded received an award in the "Polish Product of the Future" contest.

The Technology Transfer Centre is implementing the "**Innovation Incubator 4.0**" project, which aims to support the process of managing the results of scientific research and development work, particularly with regard to their commercialisation. The programme's implementation should contribute to the promotion of scientific achievements, increase their impact on the development of innovation and strengthen cooperation between the scientific community and the economic environment. One of the project's main tasks was to organise the "Subsidising Innovation" contest, the aim of which was to subsidise projects aimed at commercialising the research results of the employees and research teams at the University of Agriculture, for carrying out pre-implementation work and adapting technology to market demand by raising its technological readiness level (TRL).

One of the beneficiaries of this contest was a scientific team that built the **microwave device designed to destroy invasive plants**, including Sosnowsky's hogweed. The mobile device can be used in a variety of habitat types (variably moist; the device's unit pressure on the ground is three times smaller than under the human foot). The microwaves emit-

ted by the device's antennae are capable of destroying hogweed plants at any phase of phenological growth. Unlike other known technologies, the device is able to permanently reduce seed germination, something that has not been achieved by other methods to date. The results of the work concern the permanent eradication of unwanted invasive vegetation from various habitats, including areas of natural value, e.g. Nature 2000, landscape parks, national parks. For the destruction of invasive vegetation, the authors propose microwave radiation emitted from a horn antenna onto the plants and into the ground. The radiation emitted this way heats up the plants and the ground, including the roots, which leads to the denaturation of proteins, thereby annihilating them. It also has the undoubted advantage of heating up and thus destroying the numerous seeds around the invasive plants, which could give rise to new invasive plants in the next growing season.

Hugo Green Solution Field Robot. Photo: URK's Technologies Transfer Centre's data sets

Another activity that aims to initiate and strengthen cooperation between the scientific community and the business environment is a series of "Breakfast with an Entrepreneur" meetings. The meetings are attended by URK academics, technology brokers and representatives of companies to inspire the search for and implementation of innovative technologies in their own operations. The main aim of the meetings is to promote and support entrepreneurship, by presenting the experiences of business community representatives, as well as directing scientists to carry out work that meets the market demand. The meetings also serve to establish effective cooperation in the use of the results of scientific research conducted at the University.

The project also included the "UR Start-up School" workshop, where participants gained the experience and knowledge needed to lay the foundations of their own busi-

ness. Support was received in the form of a series of training courses related to: team building, strategic and operational activities, running the company (building company strategy, business models, business presentations). The trainings also covered the legal and accounting issues of running your own business.

Effectiveness of a method developed at the University of Agriculture for eradicating of Sosnowsky's hogweed on agricultural land. Photo: URK Archive

More information about the technologies developed by the URK's research teams can be found in the link below:

https://inkubator4.urk.edu.pl/zasoby/236/URK_broszura_Innowacja_druk_pop.pdf

Furthermore, the URK is a Partner of the *Life Science* Cluster. The main objective of the Cluster is to create a network of cooperation in *life science*, enabling the effective combination and use of the potential of individuals and institutions - businesses, universities, R&D units, business environment and local authorities in the Małopolskie region, as well as to support entrepreneurship and innovation in *life science* and create conditions for the effective commercialisation of research results from universities and R&D units.

Key **national entities** with which the University maintains close cooperation include: AGH University in Krakow, Krakow University of Technology, Warsaw University of Technology, Wroclaw University of Life Sciences, Central Research Centre of Cultivated Plant Varieties, Małopolska Hodowla Roślin HBP Sp. z o.o., Danko Hodowla Roślin Sp. z o.o., Medical University of Łódź, Orchard Experimental Station of the Institute of Pomology and Floriculture in Brzezna near Nowy Sącz, Agricultural Advisory Centre in Brwinów - Branch in Kraków, Institute of Agricultural and Food Economics - National Research Institute in Warsaw, Poznan University of Economics, Warsaw University of Life Sciences, Institute of Rural and Agricultural Development - Polish Academy of Sciences, Rzeszow University, Institute of Animal Science – National Research Institute in Krakow, Military Institute of Hygiene and Epidemiology in Warsaw.

3.2. URK's agreements and understandings on cooperation – international cooperation

Foreign entities with which the University's scientific staff cooperates include the following: Slovenská poľnohospodárska univerzita – Nitra (Slovakia), Norwegian University of Life Sciences (Norway), Institute of Plant Protection, Hungarian Academy of Sciences (Hungary), University of Skövde, School of Life Sciences (Sweden), Faculty/ School of Architecture and The Built Environment, Uppsala University (Sweden), Université de Lorraine, Nancy (France), ISARA France, Boku University Wienna (Austria), ETH (Switzerland), BBA Braunschweig (Germany), Bayerisches Amt für forstliche Saat- und Pflanzenzucht (ASP) in Teisendorf (Germany), Fraunhofer Institute for Building Physics in Holzkirchen (Germany), Julius Kuehn Institut, Quedlinburg (Germany), Helmholtz Centre for Environmental Research – UFZ, Department Bioremediation (Germany), Faculty of Forestry in Brno (Czechia), Faculty of Forestry in Prague (Czechia), Trees and Timber Institute IVALSA-CNR San Michele (Italy), University of Padova (Italy), "Lviv University of Technology" National University (Ukraine), Institute of Cell Biology, National Academy of Sciences of Ukraine (Ukraine), Selcuk University in Konyi (Turkey), Warwick Genetic Resources Unit, University of Warwick, Wellesbou (Great Britain), Instytute in Wageningen (Netherlands), University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca (Romania), University in Thessaloniki (Greece). Tomáš Baťa University in Zlín, Faculty of Technology, Institute of Food Technology (Czechia), Çukurova Üniversitesi, Adana (Turkey), National Institute of Agricultural Economics, Rome (Italy), Institute of Agricultural Economics, Bucharest (Romania), St. Stephen's University, Gödöllő (Hungary), University of Natural and Environmental Sciences, Kyiv (Ukraine), University of Veterinary Medicine and Pharmacy in Košice (Slovakia).

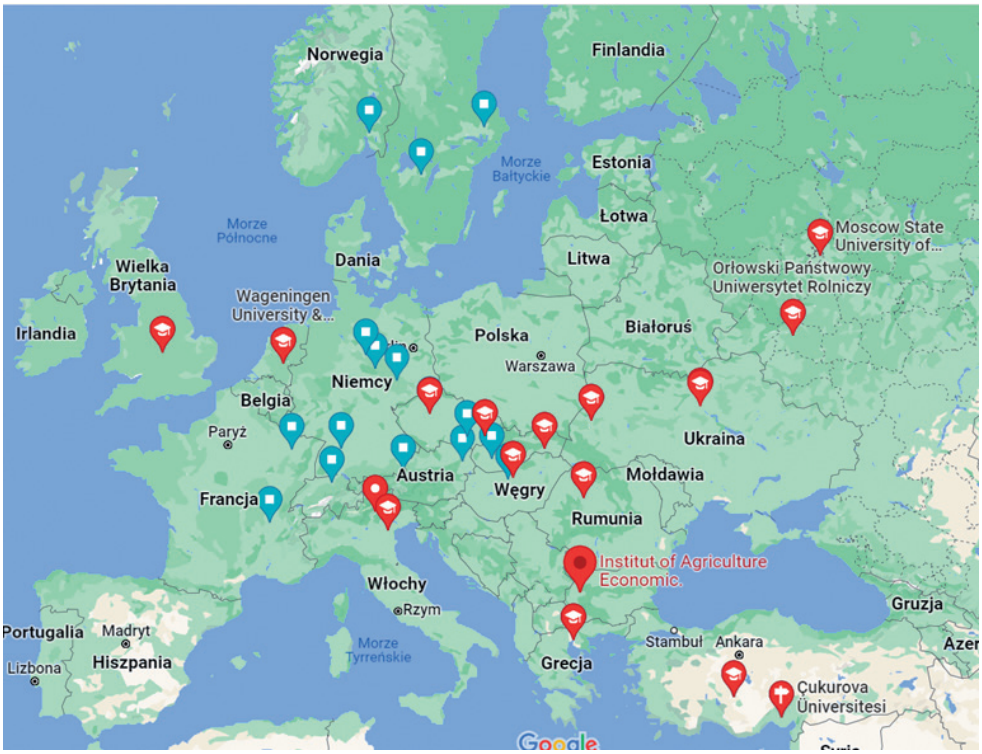


Fig. 3.4. The University's cooperation with the most important foreign entities. Prepared based on a map from Google Maps

Furthermore, entities not included in the map above: Virginia Polytechnic Institute and State University, Blacksburg (USA), University of Wisconsin, Madison (USA), Kyushu University Fukuoka (Japan), ARC-Roodeplaat Pretoria (RSA).

International cooperation. Photo: J. Okarmus

Using its potential, the University cooperates with **social and economic institutions, state and local government units or organisations working for the benefit of the countryside and agriculture in order to scientifically support their activities**. The most important entities are as follows: Krakow City Hall, Lubin City Hall, Małopolskie Voivodeship Board, State Plant Health and Seed Inspection, Zakłady Azotowe w Tarnowie-Mościcach S.A., Przedsiębiorstwo Wdrożeń i Zastosowań Biotechnologii i Inżynierii Genetycznej BIO-GEN Sp. z o.o, General Directorate of State Forests in Warsaw, Polish Federation of Cattle Breeders and Milk Producers, Pieniny National Park, Carpathian Foundation "Green Technologies" Brzezna, Ojcowski National Park, National Water Agency – Regional Water Management Board in Krakow, Małopolska Grupa Geodezyjno-Projektowa S.A, Haldex S.A., Katowice, PHU EBDOMADA, Sosnowiec, Apipol Kraków Sp. z o.o., Dobczyce, Kronopol Sp. z o.o., Żary, Krak-Ekobau Sp. J., Kraków, MoBRUK S.A., Niecew, EkoNaft Sp. z o.o., Trzebinia, GeoKat Sp. z o.o., Warsaw, Operator Logistyczny Paliw Płynnych Sp. z o.o., Płock, Petroster-Serwis Sp. J., Kraków, Ostróda, PHU EBDOMADA, Sosnowiec, Przedsiębiorstwo Wielobranżowe AGRO-EKO, Kietrz Kombinat Rolny Kietrz Sp. z o.o., Kietrz TOP Farms Głubczyce Sp. z o.o., Głubczyce, Krakowskie Zakłady Zielarskie "Herbapol" in Kraków S.A, Wytwórnia Kotłów Grzewczych, Jan Krupnik, Wieprz, Przedsiębiorstwo Rolno-Przemysłowe "Agromax" Sp. z o.o. in Raciborz, "Wratislavia-Bio" Sp. z o.o., Wrocław, Przedsiębiorstwo Produkcyjno-Usługowo-Handlowe, EKO-ENERGIA Sp. z o.o, SERTOP Sp. z o.o., Tychy, Mlekovita Zakopane, SM Nowy Targ, OSM Miechów, OSM Limanowa, Konspol S.A., Nowy Sącz, Zakład Mięsny "Wędzonka", Myślenice, Zakład Produkcyjny Salami "Sokołów S.A." Dębica, Zakład Mięsny "Kabanos" Jabłonka, Zakład Mięsny "Taurus" Pilzno, Zakład Mięsny "Markam" Kasinka Mała, PPHU DoraFood Chorzów, CEDROB Niepołomice, Agency for Restructuring and Modernisation of Agriculture – Branch Office in Krakow, National Support Centre for Agriculture, OT Kraków, Malopolskie Agricultural Advisory Centre, Dr Oetker Sp. z o.o.

4. Activities on environmental protection

4.1. Quantities of generated waste

Proper waste management is a very important element of the university's social responsibility providing tangible benefits for the environment and society. In 2020 and 2021, the URK generated 133 and 109 tonnes [Mg] of waste, respectively. The vast majority of this waste (over 80%) was mixed construction waste from the renovation of University buildings (Table 4.1). A decrease in waste generation can be observed in the period presented (2020 and 2021).

Table 4.1. Quantity [Mg] of waste generated by the URK

Year	Quantity of waste [Mg]	Quantity of construction waste [Mg] and [%]
2020	133	115, constituting 86.5%
2021	109	89, constituting 81.7%

4.2. Water consumption

The URK employed 1,426 people in 2020, 1,452 people in 2021 and 1,482 people in 2022. However, in order to obtain an indication of water consumption, it is necessary to take into account not only employees, but also other people on the University's premises. The data for the years analysed should be considered in the context of the university's variable mode of operation due to the SARS-CoV-2 epidemiological threat (Tables 4.2, 4.3).

Table 4.2. Detailed data on the volume of water consumption in the URK units

URK Unit	Quantity [m^3] 2020	Quantity [m^3] 2021	Quantity [m^3] 2022
Faculty of Agriculture and Economics	6,333	6,480	7,466
Faculty of Forestry	4,437	4,555	5,519
Faculty of Animal Science	4,588	4,791	5,658
Faculty of Environmental Engineering and Land Surveying	5,916	6,322	7,374

Table 4.2. cont.

Faculty of Biotechnology and Horticulture	3,792	4,084	4,916
Faculty of Production and Power Engineering	3,147	3,299	3,895
Faculty of Food Technology	6,257	6,637	7,559
University Centre of Veterinary Medicine	1,138	1,453	1,623
Other units	18,462	19,404	24,718
Total	**54,070**	**57,025**	**68,727**

Table 4.3. Detailed data on the volume of water consumption per employee at the URK

Year	Quantity [m^3]	Number of employees	Average water consumption (m^3 divided by number of employees)
2020	54,069	1,426	38
2021	57,025	1,452	39
2022	68,727	1,482	46

4.3. Electricity and heat consumption

Electricity and heat consumption by the URK varied in the years analysed, but the data for the years analysed have to be considered in the context of the university's variable mode of operation due to the SARS-CoV-2 epidemiological threat (Tables 4.4, 4.5, 4.6 and 4.7).

Electricity consumption for 2020, 2021 and 2022 was 5,200,000 KWh, 5,495,000 KWh and 5,800,431 KWh, respectively. On the other hand, heat consumption for the aforementioned years was 39,000 GJ, 40,000 GJ and 49,315 GJ respectively.

Table 4.4. Detailed data on the volume of electricity consumption by individual URK faculties

URK Unit	Quantity [KWh] 2020	Quantity [KWh] 2021	Quantity [KWh] 2022
Faculty of Agriculture and Economics	608,976	624,433	630,141
Faculty of Forestry	426,648	438,995	465,757
Faculty of Animal Science	441,234	461,702	477,498

Faculty of Environmental Engineering and Land Surveying	568,863	609,295	622,313
Faculty of Biotechnology and Horticulture	364,656	393,582	414,876
Faculty of Production and Power Engineering	302,664	317,893	328,769
Faculty of Food Technology	601,682	639,570	637,969
University Centre of Veterinary Medicine	109,397	140,024	136,987
Other units	1,775,880	1,869,506	2,086,120
Total	**5,200,000**	**5,495,000**	**5,800,431**

Table 4.5. Detailed data on the volume of electricity consumption per employee at the URK

Year	Quantity [KWh]	Number of employees	Average electricity consumption (KWh divided by number of employees)
2020	5,200,000	1,426	3,647
2021	5,495,000	1,452	3,784
2022	5,800,431	1,482	3,914

Table 4.6. Detailed data on the volume of heat consumption in the URK units

Analysed URK units	Quantity [GJ] 2020	Quantity [GJ] 2021	Quantity [GJ] 2022
Faculty of Agriculture and Economics	4,567	4,546	5,357
Faculty of Forestry	3,200	3,196	3,960
Faculty of Animal Science	3,309	3,361	4,060
Faculty of Environmental Engineering and Land Surveying	4,267	4,436	5,291
Faculty of Biotechnology and Horticulture	2,735	2,865	3,527
Faculty of Production and Power Engineering	2,270	2,314	2,795
Faculty of Food Technology	4,513	4,656	5,424
University Centre of Veterinary Medicine	821	1,019	1,165
Other units	13,318	13,607	17,736
Total	**39,000**	**40,000**	**49,315**

Table 4.7. Detailed data on the volume of heat consumption per employee at the URK

Year	Quantity [GJ]	Number of employees	Average heat consumption (GJ divided by number of employees)
2020	39,000	1,426	27
2021	40,000	1,452	28
2022	49,315	1,482	33

4.4. Other expenditure on environmental protection

In 2020 and 2021, the URK incurred significant environmental expenditure. Expenditure related to **changing the light sources in the URK buildings to more energy-efficient ones** (LED) amounted to PLN 422,108. Meanwhile, the cost of **replacing gas boilers** with condensing gas boilers at the Faculties of Animal Science and Biotechnology and Horticulture, and installing an air-to-air heat pump in the lecture room of the University Centre for Veterinary Medicine amounted to PLN 61,008.

Developing social responsibility for environmental protection through good practice

The University of Agriculture is taking action to deepen public responsibility and awareness for environmental protection and sustainable development. Some standout initiatives are discussed below.

Green Smart City

In 2016, the University of Agriculture established the Green Smart City Forum as a platform for the exchange of information on the comprehensive fight against smog in Krakow. By 2022, the Forum had held six meetings, and its formula was also extended to include other issues directly related to the protection of the living environment of the residents of not only large cities, but also rural areas. The Forum is open to local government officials, entrepreneurs, representatives of universities and agencies working to protect the environment, residents of the Małopolskie and other regions of Poland, as well as guests from abroad. The events are co-financed by the National Fund for Environmental Protection and Water Management. The 6th Green Smart City Forum was held in the reported period (2021); the conference did not take place in 2020 due to the epidemic situation. The forum had a hybrid format and was attended by more than 400 people, including more than 200 live participants. The deliberations were held in the following panels: Green Deal in the Smart City, Green Deal in the Smart Village and Sustainable Development. Speakers at the 6th Green Smart City Forum addressed issues such as how to properly manage urban greenery, how to adapt cities and villages to climate change, the importance of noise and light pollution in our immediate environment. The use of geospatial data in transport and urban mobility management was also debated, as well as the impact of smog on the quality of life of humans and animals.

Discussants included experienced and award-winning experts dealing with urban issues, energy, waste management, agriculture, as well as representatives of local government. The programme included the following presentations:

- "Impact of air pollution on the incidence of myocardial infarction in Krakow residents",
- "Third Generation Green Smart City, or how to build smart green cities together with residents",
- "Lighting as a key element of the smart city ecosystem",
- "Rediscovering agriculture – pathways through an uncertain future",
- "The City of New Aging – a new approach to design with a 60+ perspective".

6th Forum Green Smart City, Krakow, 28–29 October 2021. Photo: A. Mróz

Thanks to its long-standing cooperation with the Polish Ecological Club, the URK was awarded the 40th anniversary medal of the Polish Ecological Club during the 6th Green Smart City Forum for its activities in the field of ecology and promotion of sustainable management of environmental resources. (https://fgsc.urk.edu.pl/szosta_edycja.html#oforum)

POLSKI KLUB EKOLOGICZNY

AKT ODZNACZENIA

UNIWERSYTET ROLNICZY
w KRAKOWIE

MEDAL 40-lecia PKE

Stwórca-Człowiek-Stworzenie

40 LAT PKE
23.09.1980

Prezes Zarządu Okręgu PKE Małopolska
Prof.dr hab. Zbigniew Witkowski

Kraków 26.10.2021

Przewodniczący Kapituły Medalu
dr Zygmunt Fura

Act of awarding the University of Agriculture in Krakow with the 40th anniversary medal of the Polish Ecological Club for its activities in the field of ecology and promotion of sustainable management of environmental resources

National Insect Days

The National Insect Days is an annual event of an educational nature, related to entomological issues, organised since 2000 at the University of Agriculture in Krakow. The event has a wide media reach (including Radio Kraków, TVP Kraków, Gazeta Wyborcza and Dziennik Polski) and is extremely popular, especially among the youngest. The Insect Days features workshops, exhibitions and lectures on domestic, exotic insects and arachnids; nature photography and macrophotography by students or invited guests is also presented, among others. The event brings together around 50-100 students from the University of Agriculture, University staff from departments related to entomology and companies involved in terrarium sciences. Students involved in the organisation prepare lectures, exhibitions, presentations and posters on insects, collect insects in the field and organise games and contests for children. Classes are also dedicated to people with disabilities. A great attraction is the direct contact with the insects - the opportunity to pick up some of the insects.

National Insect Days. Photo: J. Okarmus

During the reporting period, the 19th and 20th National Insect Days were held in 2021 and 2022, respectively. In 2020, for the first time since its establishment, the event did not take place due to the coronavirus pandemic. The three-day meetings were organised in the Faculty of Forestry building at the University of Agriculture in Krakow under the slogans "Let's respect insects" (in 2021) and "Let's not let them die" (in 2022). During the events, collections of live exotic and domestic insects were presented: pests, feed insects, aquatic insects, coprophages, social, forest and predatory insects. Participants could see collections of live butterflies from the Arthropoda Museum in Bochnia and from the Butterfly House in Czaple Wielkie. The events also feature popular science presentations by employees of the University of Agriculture, including "Are insects lonely?" (2021), "Let's not let them die" (2022), "Insects – our allies" (2022). In 2021, the event was visited by over 350 people, 1,600 people expressed interest on the FB page, while in 2022 the event was attended by 380 people, including 1,100 people who expressed interest.

Małopolskie Educational Cloud

"Małopolskie Educational Cloud – a new teaching model" (MChE) is an innovative proposal for transferring knowledge and presenting the scientific achievements of universities using information and telecommunications technologies to students in the Małopolskie region. The project takes place thanks to the cooperation between the Małopolskie Voivodeship and leading universities from the Małopolskie region and bodies managing secondary schools. The project was co-financed as part of the Małopolskie Voivodeship Regional Operational Programme 2014–2020. Since 2020, the URK's Faculty of Biotechnology and Horticulture has been participating in the project in the field of biology. The lessons are conducted in "cloud" mode (online), i.e. with an academic teacher pre-

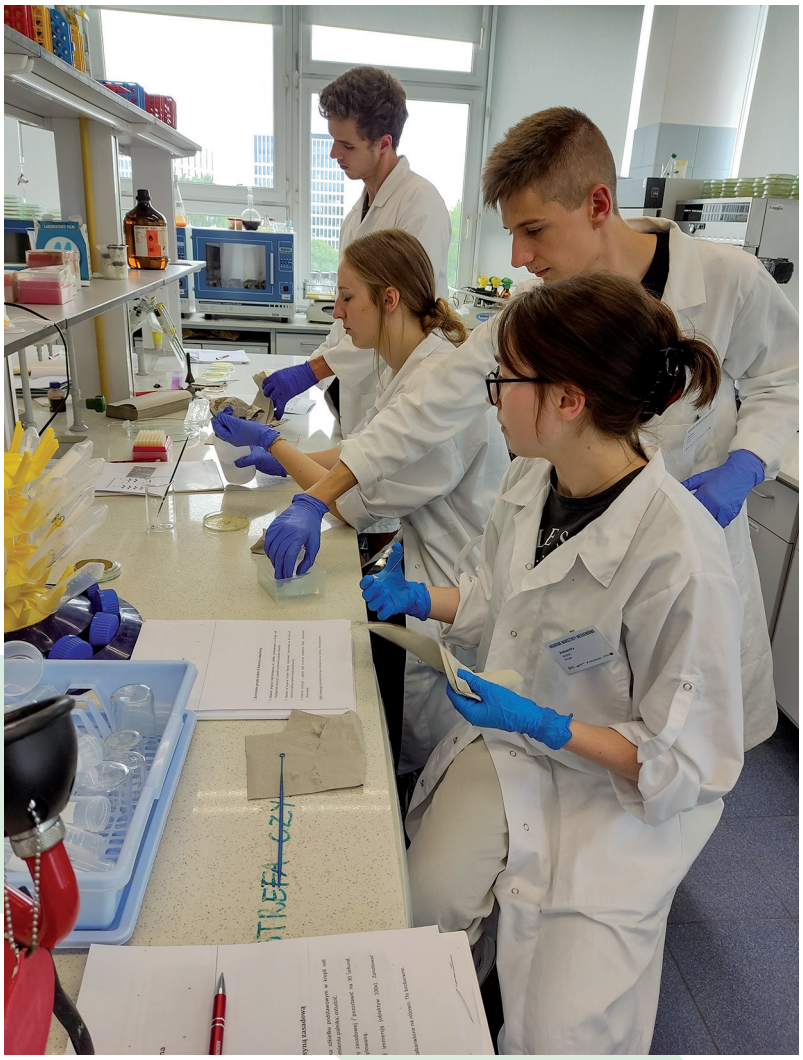
senting issues in a modern multimedia laboratory and students working simultaneously in schools (or at home during the period of maximum restrictions). In March 2022, after a break caused by the pandemic, the students were again invited to the University to participate in live classes. Each lesson is attended *online* by about 200 students from 10 high schools in the Małopolskie region, 15 people are in the studio during the recording and take part in "live" classes. Twenty students from several secondary schools in the Małopolskie region are invited to the summer workshops; these workshops last for 5 days. On 23–26 September 2021, the Faculty of Biotechnology and Horticulture hosted Summer Workshops for young people, the subject of which was "Human impact on ecosystems", and their aim was to show young people the possibilities of using scientific methods and research equipment in practice, as well as to develop scientific curiosity and encourage them to deepen their knowledge of the broadly understood environmental protection. The topics discussed were as follows: "How to use plants to assess and eliminate environmental pollution", "Impact of synthetic dyes on the environment", "Lichenoindication", "Microbiological quality of water and air".

https://urk.edu.pl/wiadomosci/9758
https://urk.edu.pl/index/site/3356/1580

Laboratory classes with young people entitled "Microbiological quality of water and air" as part of the Summer Workshops implemented in the Małopolskie Educational Cloud project. Photo: P. Supel

Laboratory classes with young people entitled "Lichenoindication" as part of the Summer Workshops implemented in the Małopolskie Educational Cloud project. Photo: P. Supel

Laboratory classes with young people entitled "How to use plants to assess and eliminate environmental pollution" as part of the Summer Workshops implemented in the Małopolskie Educational Cloud project. Photo: P. Supel



Laboratory classes with young people entitled "Impact of synthetic dyes on the environment" as part of the Summer Workshops implemented in the Małopolskie Educational Cloud project. Photo: P. Supel

Implementation of research in cooperation with external entities

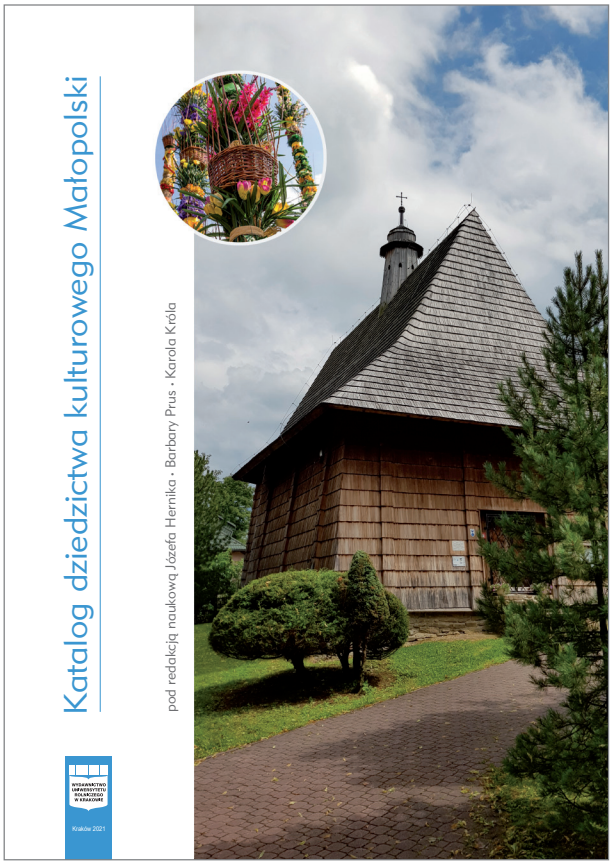
In the reporting period, i.e. in the years 2020–2022, as part of science and research work for the welfare of humanity, animals and entire ecosystems, the University's employees completed **26 orders for 24 companies and other external entities for a total amount of PLN 12,490,011**. In 2020, URK in Krakow obtained PLN 1,585,450 for the commissioned research, and in the years 2021–2022 almost seven times more, i.e. PLN 10,904,561. Selected examples of completed orders are provided below.

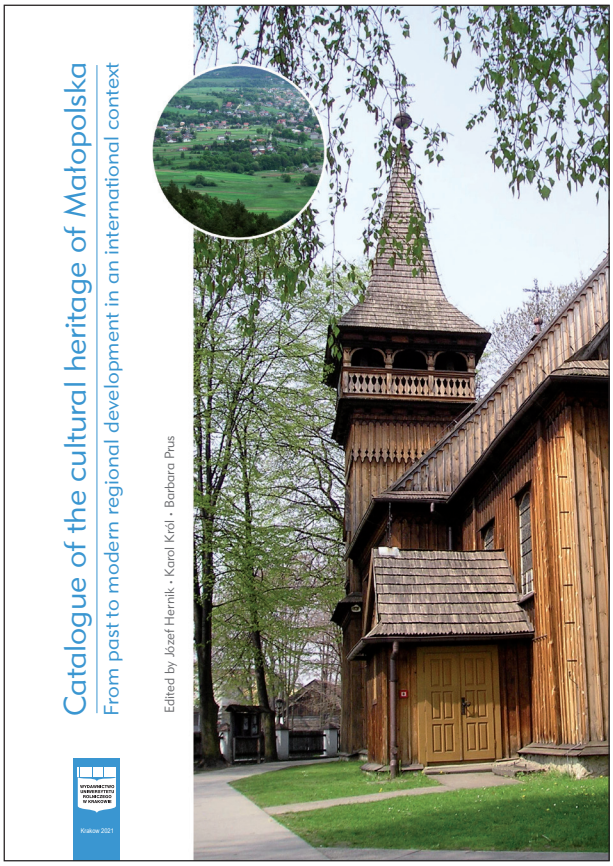
Models of the risk of forest stand death and the increase in thickness of the main forest-forming species in Poland were developed at the Faculty of Forestry, in cooperation with the General Directorate of the State Forests. At the request of the Tatra National Park, the Faculty employees also determined the species composition of fungi involved in the dying of the assimilation apparatus and the dying of dwarf pine in the Western Tatras. Employees of the Faculty of Biotechnology and Horticulture undertook research to assess the impact of fertilizers and preparations supporting plant growth, also in drought conditions, and the role of soil microorganisms in reducing plant stress caused by drought. The research was commissioned by Grupa Azoty, Intermag, Avatar Agro, ICB Pharma, Organika-Agrarius and Agro-Olsztyn. The same Faculty provided Petroster with an expert's

opinion, including an analysis of the possibilities and determination of the conditions for the use of strains of microorganisms isolated from the environment for biodegradation of selected herbicides from the phenoxyacetic group in water and soil environments. Biodegradable compounds were also the subject of another scientific and research paper entitled "Biodegradable film" prepared by scientists of the Faculty of Food Technology, on which a number of studies were carried out on the development of technological assumptions or recipes for by-products management for the production of wet dog food and the production of a new range of sorbets obtained from milk processing by-products. Employees of the Faculty of Agriculture and Economics prepared and conducted training in the field of pro-ecological elements for the Agency for Restructuring and Modernisation of Agriculture. Employees of this Faculty also carried out industrial research as part of a project concerning the development and implementation of an innovative technology consulting system supporting environmentally-friendly production management.

5. Good practices implementing the concept of university social responsibility and supporting sustainable development

1. Various forms of aid for the war-affected inhabitants of Ukraine: accommodation of 55 refugees in the URK student dormitories, fundraisers and donations in kind, meal preparation campaigns, and a specialist language course https://wtz.urk.edu.pl/aktualnosci.html/10241; https://wre.urk.edu.pl/index/site/4893/10553.
2. Innovative project counteracting social exclusion: **Care farms in rural development in the face of demographic challenges** (**GROWiD**). Objectives: development of a care farm model and preparation of its implementation system. These measures are a response to the phenomenon of demographic trap diagnosed in the Strategy for Responsible Development. Care farms will make it possible to overcome problems with the availability of social services in rural areas (https://urk.edu.pl/index/site/6085).
3. Projects increasing care for animal welfare on a national and international scale, e.g. implementation of a system for monitoring ketosis in cows or research on animal welfare and its impact on the quality of animal products, which were reflected in the creation of normative acts aimed at animal welfare in the European Union.
4. *Cultural Heritage of Small Homeland* science project, based on the concept of cultural heritage of "small homelands" – heritage that has survived in the original animal species, plant species and landscape to this day, constituting a unique treasure and value. An international project implemented in cooperation with the Faculty of Environmental Engineering and Land Surveying, and the Faculty of Food Technology at the URK, whose main goal was to indicate the tangible and intangible cultural heritage preserved in small local communities of the Małopolskie Region. The project supported the promotion of traditional products, getting to know the opinions of local communities in different countries and protecting cultural values (source: https://foodheritage.urk.edu.pl/).
5. Taking action in response to the needs and issues of local governments, including the implementation of contests for architectural and landscape concepts (e.g. the international architectural and landscape contest named "Second Life of the Fort" implemented in the Zielonki municipality, https://arch.urk.edu.pl/) and carrying out science projects in the field of rational spatial management. This translates into the implementation of sustainable development of rural and urban areas (e.g. the project name "Artificial intelligence and geo-data for sensitisation of local communities for sustainable spatial development" implemented at the Faculty of Environmental Engineering and Land Surveying of the URK, https://geosen.urk.edu.pl/).





6. Project implemented at the Faculty of Agriculture and Economics entitled "Integrated approach to the protection of ecosystems against invasive alien plants in southern Poland". The project's objective is to strengthen the resilience of selected ecosystems to the negative effects of climate change through their comprehensive protection against the penetration of invasive plant species, based on their early detection and identification of dispersal routes, as well as increasing public awareness. The project assumes a comprehensive approach, including activities in the field of active protection of terrestrial and riverside ecosystems together with monitoring of achieved effects and restoration of selected plant communities as well as environmental education.
7. Project implemented at the Faculty of Agriculture and Economics entitled "SoilBioregener – an innovative fertilizer with HydroBioMicroActive properties for the regeneration of production soils". The project's objective was to develop and test fertilizer formulae that are effective in the field of soil fertility regeneration, i.e. neutralisation of acidification and toxic substances, improvement of water and plant nutrient retention, "smart" release of nutrients and growth substances successively as the demand of plants increases, CO_2 sequestration and increasing the number or introduction of microorganisms effective in metabolic processes. The added value of the fertilizer formulae proposed in the project was the use of waste materials.
8. Project implemented at the Faculty of Agriculture and Economics entitled "The use of electrolyzed water in plant and animal production as an innovative and safe manner of limiting the use of harmful chemical compounds and antibiotics in agriculture". The project's objective was to reduce the use of pesticides and antibiotics in agriculture and to eliminate harmful chemical compounds used in the disinfection of hatching eggs.

9. Research carried out continuously at the Faculty of Forestry since 2013, entitled "Provision of research services in the field of monitoring of forest ecosystems in the vicinity of PGE Górnictwo i Energetyka Konwencjonalna S.A. Bełchatów Brown Coal Mine Branch". The work involves monitoring of forest ecosystems under the influence of the depression cone caused by opencast brown coal mining. Several dozen research areas have been established in the Bełchatów Forest Inspectorate, which manages forest areas around the mine. The following parameters are monitored: thickness and growth of tree stands, damage status of tree stands, degree of biodiversity degradation of the studied habitats. The work also involves presenting economic recommendations for wet and marshy habitats located in the depression cone's zone of influence.
10. Promoting knowledge about dark sky protection through education on light pollution. An employee of the Faculty of Biotechnology and Horticulture gave a lecture entitled "The impact of artificial lighting on the world of plants based on the example of urban greenery" during the 8th Dark Sky Festival in Sopotnia Wielka (2020) and the 13th Urban Planner's Day in Poznan (2020).
11. Patent no. 238540 for an invention concerning the removal of heavy metals from waters and pre-treated wastewater using aquatic plants awarded to an employee of the Faculty of Biotechnology and Horticulture (2021).

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In addition to the Good Practices described above, other, diverse social activities are undertaken at all URK faculties, having a wide social impact. These include the following:

- completed high-cost investments in the university's infrastructure. Noteworthy is a modern, full-size and multifunctional sports hall for teaching and sports activities – the first passive design hall put into use at a university in Poland, allowing to achieve up to 90% energy efficiency compared to standard buildings.

Passive design sports hall of the University of Agriculture in Krakow. Photo: A. Mróz

Centre for Experimental and Innovative Medicine, University Centre of Veterinary Medicine.
Photo: A. Mróz

- patents have been implemented, often in cooperation with companies,
- waste segregation (coloured bins) has been introduced at the faculties,
- bicycle racks were made available,
- rechargeable batteries are used instead of regular batteries,
- lawns surrounding the buildings are turned into flowerbeds and zones of edible greenery, friendly for bees and other insects,
- transition to electronic instead of printed materials is underway,
- maintaining good neighbourly relations, among others, by cooperating with the Pietruszkowy Market, with the Warzywniak in Bieżanów and with numerous smaller and larger local companies, helping to solve production problems (FFT),
- teachers act as experts on textbooks in schools, they keep order at the final exams in Primary Schools and during the secondary school exams, they sit on the jury of the Agricultural Knowledge and Skills Olympics,
- carrying out the "Crayons instead of flowers" campaign, the collected art materials are given to care facilities, hospitals, orphanages, children's hospices,
- promoting science and knowledge – numerous (several dozen per year) workshops for kindergartens, primary and secondary schools and seniors, additionally the Małopolskie Researchers' Night, Science Festival and many other initiatives having a pro-social and pro-environmental impact on the University's surroundings,
- the Faculty of Food Technology has introduced an innovative solution, i.e. the **staggered schedule** during the pandemic. This innovative approach involved organizing education in such a way that a given year of Faculty's students attended accumulated classes that shaped practical skills; the classes were carried out in laboratories. The students had the opportunity to have direct contact with the teacher, who is irreplace-

able during education, especially during the implementation of diploma theses in the field of agricultural and natural sciences. Subsequent verification showed that this form of teaching not only guaranteed the possibility of achieving the assumed learning outcomes (especially in the field of practical skills), but also helped to shape the students' social competences.

Horses at the Experimental Station in Rząska. Photo: URK Archive

Harvesting oats at the Experimental Station in Rząska. Photo: URK Archive

Open Day at the URK, 2022. Photo: A. Mróz

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