



Annual Report 2023



Faculty of Tropical
AgriSciences

Dean's Introduction

Dear colleagues, students and friends of the Faculty of Tropical Agriculture, in last year's welcome word to the 2022 annual report, I had expressed my hope that 2023 would have brought back peace and normality.

It would seem that my hope was in vain. Indeed, instead of seeing the war in the Ukraine end, it has continued and brought more deaths and sorrow. As such, the 'world' learned how to cope with the situation so that the energy and food crises were seemingly solved without too much fuss. How cynical! The Ukraine crisis failed to teach this world the uselessness of war and conflict, and so on October 7th another round of lunacy started. Sacred books in hand both parties seem to claim they have (their) God on their respective sides resulting in an escalating conflict that seemingly will not have any end to it. In the meantime, more silent, also mostly ethnic, conflicts like the one in the Kivu area involving Rwanda continue. The latter is 'tolerated' by – again – the 'world' as intervening would mean that accessing some of the precious minerals we seem to need (read: coltan) would be jeopardized. So, a deep sigh! What all of these conflicts have in common is that they come out of pursuing self-centred, personal interests that often only serve the personal financial gain of a limited number of usurpers. Keywords here are: selfishness and abuse of power.

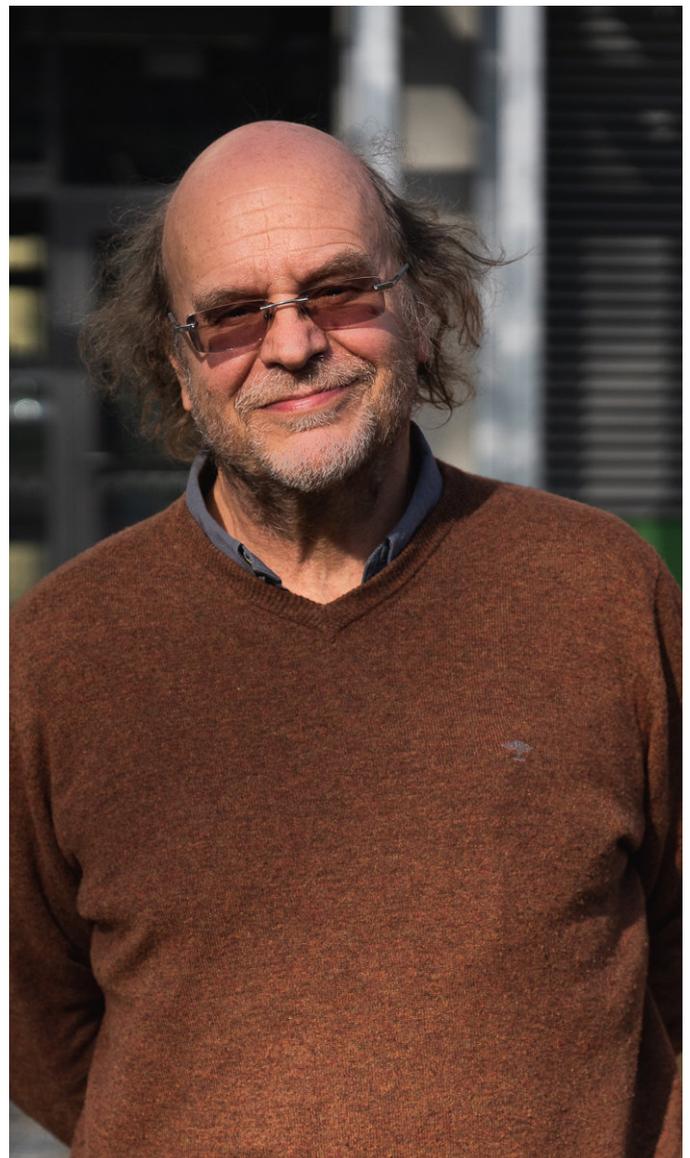
Towards the end of the year Prague itself, and thus the Czech Republic as a whole, were hit by a senseless massacre perpetrated by a Charles University student. The latter brought a lot of sorrow, but also feelings of fear and suspicion, that may take a long time to address and solve.

And yes, I know that Immanuel Kant (and not Karl Popper, who quoted Kant so often that now many people think that it is a Popperian quote...) once told us that 'Optimism is a moral duty' but this moral duty is challenged more and more by reality.

Looking at all of this from a distance, one can only conclude that not only has the global world become more insecure, but also that a number of global problems such as climate change and biodiversity loss have been exacerbated. As it is, the transition towards more sustainable, greener energy has come to a halt, as more petrol, gas and coal are currently being sourced and produced. As a result, nature and biodiversity continue to be unsustainably exploited, but are also under pressure from rising temperatures, freakish and extreme, often unpredictable, weather events that result in floods, fires, drought spells...

However, we at the Faculty of Tropical Agrisciences take an interest in studying the latter problems, and the mechanisms driving them. In a number of cases, we contribute to finding and developing solutions to address these problems. We also provide teaching on the major issues our world is facing. We can only hope that we are and will continue to be able to help the world transition into a more balanced, sustainable future. In this respect, I would like to highlight the on-line, 2-year Msc course programme on Tropical Agroecology (<https://tropag.ftz.czu.cz/en>) that we launched in 2023 and that in the words of the presentation text 'focuses on the study of interactions between plants, animals, humans and the environment with wider tropical and subtropical agricultural systems, taking into account the socio-economic aspects needed to develop sustainable and equitable food systems that support the Sustainable Development Goals. Agroecology combines science with traditional practices to provide long-term solutions to agricultural issues that empower local communities and producers. As such, our ambition

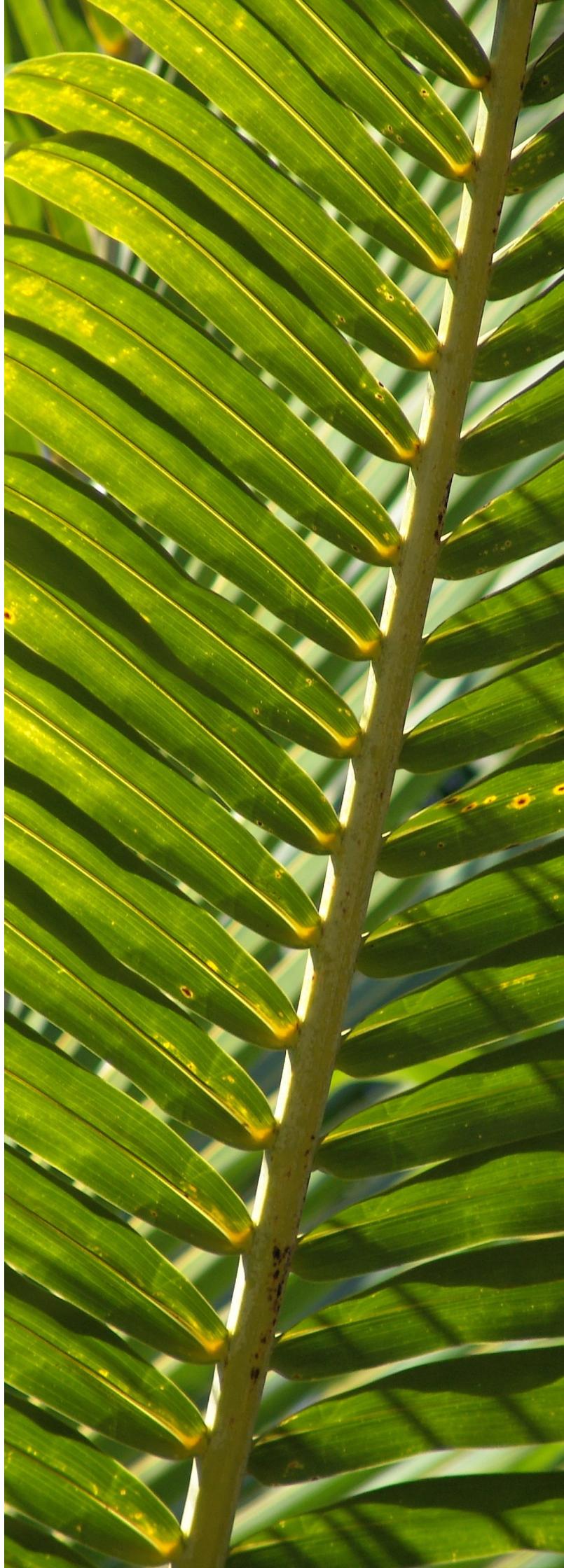
is to train a large number of young enthusiasts in the broad field of sustainable agriculture that has a holistic approach to agricultural production to the common benefit of nature and livelihoods, with respect for natural resource conservation and the processes that govern them. In the same vein, we are an active partner in the GLOFOR (<https://globalforestry.eu/>) programme, 'a 2-year, world-class MSc programme that prepares graduates to deal with forestry's tremendous contemporary challenges and potentials in medium- and long-income countries. I hope both programmes will attract high numbers of students and that through them we will, as a tropical-oriented agricultural faculty, be able to contribute to a better future for our planet, as indeed through our teaching, research and contributions to society we want to be part of the solution, not of the problem! And so, also: let us be ambitious and let us aim high: per aspera ad astra (through hardship to the stars)!



PROF. DR. IR. PATRICK VAN DAMME
THE DEAN

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Basic Facts about Faculty

Introduction

The Faculty of Tropical AgriSciences of the Czech University of Life Sciences Prague (CZU) is a unique centre of research in our country with what is now a 60+ year tradition in tropical agriculture and the sustainable management of natural resources in the tropics, promoting rural development, food processing and food security, alternative technologies based on renewable sources of energy, economics, and the sociology of rural areas in developing countries.

The Faculty offers studies in Bachelor's, Master's, and doctoral study programmes, with study in Master's programmes taking place exclusively in English, resulting in a significant proportion of our students coming from outside the Czech Republic.

Graduates typically find employment in the Czech Republic, the EU, and around the world, both in the private sector and in governmental and non-governmental institutions dealing with issues of developing countries in general, trade, education, technology transfer and, last but not least, conducting research in the tropics.

MISSION

The mission of the Faculty is to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence possible.

More specifically, we provide higher, university and research-supported/derived/based education to foreign and Czech students in the fields of (sub)tropical agriculture, rural development, and the sustainable management of natural and energy resources in the tropics and subtropics.

An integral part of our mission is to perform research and the development of new insights into the broad field of (sub)tropical life sciences and the application of R&D results in the specific conditions of (sub)tropical and/or developing countries.



VISION

The vision of the Faculty is to be an institution of in the Czech Republic and Europe, with the specific mandate to transfer the latest knowledge and technology between the Czech Republic, the EU and (sub)tropical regions in the Global South, building on and respecting the traditional values of local communities in the developing world as well as respecting their level of socio-economic and technological development. This also involves empowering our students to fulfil their academic and professional passions and aspirations in an environment that is – de facto – diverse, welcoming, and inclusive for all students, the Faculty and staff.

This further means serving our community of alumni through imaginative and creative programmes that inspire a lifelong relationship with the Faculty and help expand our contributions to the world.

Official name and address

Česká zemědělská univerzita v Praze
Fakulta tropického zemědělství
Kamýcká 129
165 00 Praha – Suchdol

IN ENGLISH

Czech University of Life Sciences Prague
Faculty of Tropical AgriSciences
Kamýcká 129
165 00 Prague – Suchdol
Czech Republic

ABBREVIATIONS

FTZ ČZU (in Czech) FTZ CZU (in English)
FTZ (in Czech) FTZ (in English)

WEBPAGES OF THE FACULTY

www.ftz.czu.cz

Structure

FACULTY MANAGEMENT

Dean

Prof. Dr. ir. Patrick Van Damme

Head of Dean's Office

Mgr. Dagmar Dočkalová

First Vice-dean and Vice-dean for Science, Research and Doctoral Study

Prof. Ing. Jan Banout, Ph.D.

Vice-dean for International Relations

Ing. Petra Chaloupková, Ph.D., Dr.h.c.

Vice-dean for Education and Quality

Ing. Jiří Hejkrlik, Ph.D.

Vice-dean for Development

Ing. Jana Mazancová, Ph.D.

TAB 1.1 LIST OF THE DEPARTMENTS AND UNITS

NO	CZECH NAME	ENGLISH NAME
51110	Katedra tropických plodin a agrolesnictví	Department of Crop Sciences and Agroforestry
51120	Katedra chovu zvířat a potravinářství v tropech	Department of Animal Science and Food Processing
51130	Katedra udržitelných technologií	Department of Sustainable Technologies
51140	Katedra ekonomiky a rozvoje	Department of Economics and Development
51150	Botanická zahrada FTZ	FTZ Botanic Garden
51900	Děkanát: – Sekretariát děkanátu – Studijní oddělení – Oddělení mezinárodních vztahů – Oddělení pro vědu, výzkum a doktorské studium – Farmový chov antilop losích a lam guanako v Lánech	Dean's Office: – Secretariat of Dean – Academic Administration Office – International Relations Office – Office of Research and Doctoral Studies – Eland and Guanaco Farm at Lány



DEPARTMENT OF CROP SCIENCE AND AGROFORESTRY

The mission of the Department is to perform educational and research activities in the field of crop production in the Tropics and Subtropics aimed at increasing the sustainability and productivity of agricultural crops, with a special focus on small-scale agricultural systems through a wider use of crop diversity. In terms of education, the Department focuses on the cultivation, use and ecology of tropical crops with emphasis on traditional small-scale farming systems (e.g. agroforestry), but also on the use of modern methods, such as plant biotechnology, supplemented by specialised disciplines such as ethnobotany or chemo ecology.

The research of the Department focuses on the selection and research of new crops (and especially on neglected and underutilised species with promising economic value) and the conservation of their genetic resources. Research includes ethnoecological studies of small-farmer communities and indigenous groups to determine the species diversity of cultivated and naturally growing useful plants and to describe traditional practices in their cultivation, processing, and use.

The Department operates 4 specialised laboratories. The Molecular Biology Lab focuses on the genetic characteristics of crops, especially on research into the population genetics of tropical agroforestry trees. The Plant Tissue Culture Lab focuses on research into new methods of *in vitro* propagation of plant material for the production of genetically identical and healthy planting material. The Ethnobotany and Ethnopharmacology Lab researches the nutritional properties, chemical composition, and medicinal effects of plants, with the aim of identifying new nutritional and health-promoting foods and developing promising products usable in the food and pharmaceutical industries. The research of the Soil Biology, Ecology and Environmental Research Lab focuses on the evaluation of soil biodiversity and the functions of soil organisms in the conversion of nutrients. The Department also operates a programme of voucher specimen collection.

The Department currently employs a total of 10 academic staff (3 professors, 1 associate professor, 3 assistant professors, and 3 researchers) and more than 40 Ph.D. students. Employees and students of the Department are involved in four research teams: the Tropical Biodiversity Research Group, the Tropical Biotechnology Research Group, the Tropical Botany and Ethnobiology Lab, and the Tropical Ethnobotany and Ethnopharmacology Lab. The research activity of the Department is mainly conducted in the form of student diploma dissertations with the aim of their publication in the form of scientific articles (in 2023, the members of the Department participated in the publication of 33 articles in journals with IF). Four doctoral students from the Department successfully defended their dissertations in 2023.

DEPARTMENT OF ANIMAL SCIENCE AND FOOD PROCESSING

The Department's activities can be divided into two main areas according to the two specialisations of the freshly re-accredited Master's Degree programme Wildlife and Livestock Production, Management and Conservation, which the department guarantees: 1) sustainable animal production and 2) wildlife management and conservation.

The research and pedagogical activities in sustainable animal production focus on applying modern knowledge about livestock farming in the Global South. The primary emphasis is on the breeding

and utilization of local species and breeds of animals, their nutrition, feeding, disease prevention, and welfare.

Within the specialisation dedicated to wildlife, department members deal with ecology, population management and conservation, and the agricultural use of native species in the Global South. The department primarily concentrates on the protection and population management of ungulates, the mitigation of conflicts between wildlife and humans or livestock, the management of protected areas, and environmental education in developing countries. Both specialisations are connected by our genetic research, which mainly focuses on the genetic viability of species.

Since 2000, department members have been involved in Western Giant Eland (*Tragelaphus derbianus derbianus*) conservation in Senegal. They implement projects to protect the antelopes in the West and Central African savannah under the auspices of the Antelope Conservation NGO. Since 2006, the Department has managed farm breeding of the Common Eland (*Tragelaphus oryx*) at the CZU Experimental Farm in Láňy, where a guanaco llama farm (*Lama guanicoe*) was also established three years later. The department operates the Laboratory of Animal Science, the Laboratory of Molecular Genetics, and the Laboratory for Detection and Characterisation of Pathogens.

The Department's research activities are concentrated in four research teams - Animal Physiology and Behaviour, e4 (Ecology, Evolution, the Emergence and Epidemiology of Zoonoses), MEGERA (Molecular Ecology, Genetics and the Evolutionary Research of Animals), and the Wild Ecology Lab. Research activities of the department are funded by various grants from the Ministry of the Interior, Horizon 2020, the Developmental Agency and by means of contracted research. In 2023, the department had a total of 9 core academic staff and 32 doctoral students. Members of the department published 29 articles with IF, including in highly ranked journals such as Science.

DEPARTMENT OF SUSTAINABLE TECHNOLOGIES

The Department of Sustainable Technologies focuses on research in fields that have a direct impact on security and agricultural and rural development in the tropics and subtropics. The Department's research is oriented towards bioresource and agriculture technology, food processing technology and food security. The Department also focuses on monitoring the impact of environmental and climate change on agriculture in tropical environments and developing countries.

As of 2020, the Department includes a team dedicated to the study of termites, their impact on the environment and human life in the tropics. Currently, research at the Department is funded by projects of the TACR, Horizon 2020, Horizon Europe and other donors. Additional funding comes from the Czech Republic's foreign development cooperation programmes, where the Department is addressing or participating in addressing a significant number of projects at the Faculty. The Department operates the Environmental Technology Laboratory, the Food Processing Technology Laboratory and the Termite Biology Laboratory. The Department is involved in teaching in most of the accredited programmes of the FTZ. The DST is a guarantor of the M.Sc. programme Agri-food Systems and Rural Development and the Ph.D. programme Sustainable Rural Development. Both are taught in English. The Department also provides teaching for foreign students within the Erasmus+ exchange programmes.

Currently the department has a total of 9 academic staff including one professor, five associate professors, and three assistant professors. In addition to the academic staff, there are 26 Czech and foreign Ph.D. students.

DEPARTMENT OF ECONOMICS AND DEVELOPMENT

The Department has long-term experience in analysing the economic, environmental, and social aspects that affect the sustainability of agricultural production, natural resource management, added value generation, and the commercialisation of agricultural production. Topics such as migration, consumer behaviour, agricultural policy, adaptation to climate change, profitability and sustainability of farming systems, collective action of small producers, and various forms of certification have become an integral part of the research.

The Department is the guarantor of the Bachelor's study programme International Cooperation in Agricultural and Rural Development (ICARD) and the Master's study programme International Development and Agricultural Economics (IDAE). The academic staff is also involved in teaching in other programmes of the Faculty and cooperates with partner universities in Czechia and Europe (namely Belgium, France, Italy, Germany, Spain, Denmark, Sweden and Greece) and in countries of the Global South (e.g. Ethiopia, Indonesia, Cambodia, Cameroon, Kenya, Nepal, Ukraine and Zambia).

The main emphasis is given to the interdisciplinary character of research with the connection to practice. This is achieved through cooperation with global research organisations and institutions (high-ranked universities, the CGIAR system, the UN system, etc.) and development-oriented activities in the countries of the Global South, such as recently in Cambodia, Georgia, Kenya, Kyrgyzstan, Nigeria, Nepal, Peru and Zambia. As a result, academic staff at the Department published 22 scientific articles indexed in the Web of Science database in 2023. The Department also continued implementing R&I projects funded by Erasmus+, EUTF for Africa, GCF/FAO, Horizon 2020, and Czech development assistance.

In 2023, the Department consisted of seven regular academic staff members, including one associate professor and six assistant professors, out of whom two hold the position of vice-dean of the faculty, and 24 Ph.D. students supervised by four internal and external specialists.

BOTANIC GARDEN

The Botanic Garden of the Faculty of Tropical Agriculture the CZU in Prague was built simultaneously with the construction of the entire complex of the University of Agriculture in Prague. The operation of the greenhouses (under the name of the original Institute of Tropics and Subtropics) started on 1 January 1968. In 2011 the Botanic Garden fulfilled the strict conditions for joining the Union of Botanical Gardens. Since 1 January 2013, the Institute of Tropics and Subtropics (ITS) became the Faculty of Tropical Agriculture (FTZ), which also changed the name of the Botanic Garden. The Botanic Garden of the Institute of Tropics and Subtropics of the Czech University of Agriculture in Prague became the Botanic Garden of the Faculty of Tropical Agriculture, Czech University of Life Sciences in Prague.

Currently, the Botanic Garden has an area of 3,800 m² (including outdoor areas). The exhibition of the Botanic Garden is divided into indoor (5 greenhouses and 2 polycarbonate covers) and outdoor areas. The greenhouse area of almost 1,400 m² contains 1,500 tropical and subtropical species of useful plants divided into several thematic

collections (the national citrus collection, tropical plant collection, subtropical plant collection, annual useful plant collection, chilli pepper collection, outdoor medicinal plant collection, outdoor tea tree collection, etc.).

The Botanic Garden also manages two polycarbonate shelters where last year assortments of annual tropical and subtropical useful plants were grown, especially the genera *Nicotiana*, *Physalis* and the extensive families *Cucurbitaceae*, *Poaceae*, *Fabaceae* and *Solanaceae*. The latter family (i.e. *Solanaceae*) also includes an extensive collection of chilli peppers. The collection consists of about 120 taxa of more or less hot peppers, on which research work of students and teachers has been carried out and which are part of the exhibition organised by the BG every autumn. Another outdoor area is occupied by well-known and lesser-known species of medicinal plants. The last area is an open field where experimental cultivation of lesser known annual cash crops takes place.

The collections of the BG FTZ show useful plants that are cultivated all over the world for their direct and indirect benefits. The collection of plants is so unique, due to its subject matter and scope, that its like is not seen anywhere else in the Czech Republic or Central Europe. The collection of useful plants, like the collections in other botanical gardens, helps towards the *ex situ* conservation of living plants, in teaching students from the faculty and the whole university, in education and the training of the professional and general public in botany, agriculture and environmental protection, and also serves a recreational and relaxing function.

For the Botanic Garden, the year 2023 was marked by a continuation of the changes initiated in 2021 and 2022. Anežka Daničková, continues to strive to maintain the continuity of a well-established BG with a quality collection while at the same time introducing into the structure of the Botanic Garden elements of good practice common in other similar facilities. In 2023, the working team, which was formed in a very challenging way, has changed. Thus, a total of 9 staff members now cares for the BG FTZ collections.

During 2023, the BG continued to inventory and digitise extensive data on plant and seed material. The data obtained has once again reminded us of the comprehensiveness and uniqueness of the collection of useful plants. The biodiversity of this collection is unrivalled in Central Europe, and at a time of government restrictions on imported plant material from third countries, it is no longer even possible to create similar collections. The need of the hour was to quantify the value of these collections. The collection was valued at CZK 459,970,000. The valuation of the BG FTZ collection is a pilot project in the valuation of the collection of botanical gardens of the Czech Republic and was carried out in cooperation with the President of the Union of Botanical Gardens of the Czech Republic, Mgr. Pavel Sekerka. On the basis of this document, a unified methodology for the valuation of the plants in the collections of botanical gardens of the Czech Republic will be developed in cooperation with the Ministry of Agriculture.

Another major event in 2023 was the announcement of the National Citrus Collection. This is a registered and documented plant collection, which includes 164 subtropical and tropical plants of the genus *citrus* in the regular collection. A further 50 or so species of citrus are in the working collection. The citrus collection was established in 1974, with the arrival of the first plants from the Crimea. These founding varieties are still part of the extensive collection. The collection consists of seedlings, cuttings and grafted plants from a variety of sources.

The plants are grown in open soil and in containers and are divided mainly according to temperature requirements and species groups.

In 2023, the BG continued to update its website, created a separate Facebook profile of the FTZ Botanic Garden and introduced a system of regular weekly posting of news on social media and the FTZ website. Most of the new nameplates in the tropical and subtropical greenhouse were created and placed in cooperation with the Faculty of Forestry and Wood Technology, specifically the Biomaterials Processing Laboratory. Worksheets have been created for field trips for kindergarten and primary school pupils (1st grade) to give pupils a playful insight into the world of tropical and subtropical useful plants.

The Botanic Garden published a *Index Seminum* of 677 items for 2023, which are offered to more than 200 Czech and international botanical gardens. In the past year, the Botanic Garden organised and participated in thematic exhibitions organised by the Union of Botanical Gardens of the Czech Republic and also organised guided tours as part of events organised at the CZU and FTZ, such as Open Days, Garden Festival, Open Gardens Weekend, Children's Day, etc. During the year, the botanic garden hosted excursions, internships, research work, student teaching and workshops on grafting plants or tying Advent wreaths.

In 2023, the development of the collections continued, we managed to organise several excursions to botanical gardens in the Czech Republic and Europe, to establish contacts, collect inspiration for further development and increase the expertise of our staff.

RESEARCH ACTIVITIES

The Botanic Garden has long worked closely with the research team "Tropical Biotechnology", led by Prof. Eloy Fernández (FTZ). This team is dedicated to the breeding of medicinal and ornamental plants by means of induced polyploidy *in vitro*. Primary research is carried out in the Plant Explants Laboratory of the FTZ of the CZU, and then the newly obtained genotypes are further cultivated and maintained in the BG of the FTZ, where the plants are studied mainly from the morphological point of view. Last year, the following plant species were grown in the Botanic Garden: *Mentha spicata* L., *Melissa officinalis* L., *Solanum muricatum* Aiton, *Rosmarinus officinalis* L., *Satureja montana* L., *Moringa oleifera* Lam. These investigations will continue into the next year, while an extensive collection of yacon (*Smallanthus sonchifolius* (Poepp.) H. Rob.) is still maintained for scientific purposes. This South American perennial is grown under field conditions in the BG FTZ during the growing season, and propagating material (caudex) is kept in greenhouses during the winter.

The Botanic Garden continues to cooperate with the Institute of Organic Chemistry and Biochemistry of the CAS. In 2023, scientific cooperation between the BG FTZ and researchers from the Tomas Pluskal group at the Institute of Organic Chemistry and Biochemistry of the CAS was discussed. Scientific work was carried out on pepper plants, chilli peppers and selected medicinal plants. Pepper plants served as a source of chemical structures for the development of new drugs. More than 40 cultivars of chilli peppers were provided, previously undescribed capsaicinoids were mapped and a "complete encyclopaedia of capsaicinoids" was created.

Further scientific work is being carried out in cooperation with the CMA and other institutions on the plant species *Theobroma cacao* L., *Murraya koenigii* L., *Hedera helix* L., *Calisia fragrans* Lindl., etc.

MEMBERSHIP IN INSTITUTIONS AND COOPERATION WITH ORGANISATIONS

The Botanic Garden of the FTZ CZU has been an active member of the Union of Botanical Gardens (UBZCR) since 2011. Through the UBZCR there is cooperation with other member botanical gardens and regular exchange of information on current events in individual gardens. At the same time, the Botanic Garden cooperates with the state administration authorities through the UBZCR and receives information on the latest news concerning possible changes in legislation and requirements arising from the international obligations of the Czech Republic. In 2023, the BG FTZ participated in two events organised by the UBZCR:

- Union of Botanic Gardens 2023 (Děčín – Saxony)
- Conference of the UBZCR, which focuses on the long-term training of botanical garden managers

The BG FTZ in cooperation with the Ministry of the Environment recorded a series of podcasts with well-known personalities of the Czech Republic. The interviews were conducted by naturalist Ladislav Miko in the tropical greenhouse of the botanical garden.

The BG FTZ established a mutually beneficial cooperation with the National Museum of Agriculture. In exchange for the surplus plant material, the BG FTZ gained experience in PR, the creation of advertising and promotional materials and the possibility of representing the BG FTZ and, by extension, the entire CZU. Furthermore, the BG FTZ gained the opportunity to borrow panel exhibitions created by experts from the National Museum of Agriculture and friendly organizations.

In 2023, the BG FTZ established cooperation with the company LAND CRAFT SPIRITS within the framework of a pilot project of circular spirits. Plant waste material that would ideally be turned to compost is here utilised to form a drink called 'Circular Citron'.

Last but not least, last year also saw inter-faculty cooperation between the BG FTZ and the Faculty of Agrobiological Sciences, Food and Natural Resources, the CZU in Prague. The Food Pavilion of the FAPPZ not only provided the BG FTZ with a sophisticated space for the production of chilli paste, but the Food Pavilion staff also eruditely prepared all the legislative documents necessary for the sale of food (chilli paste) and ensured the production of labels for the finished products.

PROFESSIONAL ACTIVITIES – FLORIUS

The Florius database is a joint project of the Union of Botanical Gardens of the Czech Republic and the Botanical Garden of the Capital City of Prague. It is a joint project of the Floristic Garden of Prague. It is used to register cultivated plants and to publish their data on a web interface. The programme was created at the end of 2005 and the Botanic Garden of the Czech University of Life Sciences has been actively using it since its accession to the UBZCR. The database, thanks to its extensive dictionaries, enables standardisation of entries, synonym search, data management and selection. It is essential to use the system for inventorying plant material, and the incremental numbers obtained from it serve for simple and clear cataloguing of individual plants.

DEVELOPMENT

The year 2023 was a very successful year in terms of change and development planning. In addition to the small projects implemented,

the BG FTZ submitted two grant applications during 2023. The first one was dedicated to environmental education and training and was announced by the Municipality of Prague. Through guided educational tours within the BG FTZ premises, the project seeks to introduce the world of tropical and subtropical plants to primary school visitors from different angles, to enrich their existing natural science knowledge and to encourage them to think about tropical and subtropical crop cultivation, its ethics, sustainability and environmental protection. The programme offered is interactive, exploratory and observational, and draws on the experience of the Botanic Garden staff with specific groups of visitors from nursery and primary schools. At the same time, the programme seeks to reach out to the local community and involve them in what is happening at the CZU.

The second project, TACR, was developed in cooperation with the Czech Technical University in Prague and deals with an innovative method of efficient use of surplus production of photovoltaic power plants on agricultural farms.

MARKETING AND PUBLIC RELATIONS – SUMMARY

The year 2023 was marked by a greater emphasis on marketing and PR. This is an area in which the Botanic Garden has the potential to improve and is focusing on optimising. In particular, it will strive for the correct targeting of the Botanic Garden's promotion and presentation, the setting up of staffing areas and the efficient setting up of work processes.

Interest in the Botanic Garden is also growing thanks to additional activities such as greenhouse rentals, sales of plant surpluses, plant loans for balls, conferences, etc. In the past year, the Botanic Garden created floral arrangements for important events - conferences, open days, balls, and also contributed plants to a raffle! The space of the greenhouses is actively used not only by the entire Czech University of Life Sciences in Prague, but also by the general public (for example, to record podcasts, take photos of interiors, etc.).

The thematic exhibitions organised by the Botanic Garden are also popular. The autumn exhibition of chilli peppers, of which there are more than 120 taxa in our collection, is already a tradition. In 2024, the BG would like to organise more such exhibitions.

In 2023, 80 guided tours were held at the Botanic Garden, with a total of more than 2,300 visitors to the BG.

The additional activity of selling spring seedlings is also important. This is primarily used as plant material for basic practical skills training for students or for research work by students and teachers. Secondly, however, this material is sold and is very popular among CZU employees and the public for its quality and wide range of products.

CENTRE FOR INFECTIOUS ANIMAL DISEASES (CINEZ)

The Centre for Infectious Animal Diseases (CINeZ) was established in 2020 as an interfaculty centre involving experts from several CZU faculties, including the FTZ. Researchers at CINeZ deal with the issue of infectious animal diseases and zoonoses. On behalf of the FTZ, the activities of CINeZ are conducted mainly by the "e4 research group" led by Dr Jiří Černý and the "CZU mobiLAB" team led by Dr Roubík. In 2023, the CINeZ FTZ research teams worked on research into numerous animal infectious diseases and zoonoses. We described infections of several species of endangered animals (e.g., gorillas, leopards, and also

white rhinos, in which the infection was discovered for the first time) by coronavirus SARS-CoV-2. We continued with a project focused on the establishment of mobile laboratories by preparing an upgraded version of the CZU mobiLAB, which would be more suitable to work with even more dangerous biological agents at even higher levels of biological safety and at higher quality standards. Further, we established a collaboration with other researchers developing mobile laboratories in Europe. In 2023, CINeZ employees also participated in basic research and the teaching of students.

COMMON ELAND AND GUANACO FARMS

Since 2002, the FTZ has been managing Common Eland (*Tragelaphus oryx*) breeding and since 2009 also the breeding of Guanacos (*Lama glama guanicoe*). The research facility is located at the CZU Farm Estate in Láň, where a barn with handling system and paddocks for the Common Elands and paddocks with shelter for Guanacos were opened in 2006.

Despite the fact that the facility was established for the production of live animals and meat, the predominant interest of the FTZ is research, whether carried out in the form of student work or research projects with international cooperation. Over the years, the facility has been used in student practical training, student internships, for student and public excursions and demonstrations of a unique intensive breeding method for national and international visits.

From 2017 onwards, we continued to renew tree planting on the farm, both landscaping and productive, especially of old varieties of high-stemmed fruit trees, with the aim to establish integrated agroforestry system. For the llamas, this involved the transformation of non-productive apple plantations by cutting and debarking to new plantings in high-stem orchards. In the antelope enclosure, a handling system is in regular use, enabling contactless separation of the animals, weighing and fixation, which allows sampling and examination of the animals without the need of anaesthesia. The handling system includes also an automatic scale. Sample collection continues regularly every month, allowing a long-term data collection for blood biochemistry analysis, hormonal level analysis, body condition, weight gain, and behaviour of the animals. Students regularly join routine handling within the practical subject Animal Handling, Sampling and Processing where they participate in animal manipulation, sampling, and subsequent analyses including data processing. Bachelor students do regular practical training which lasts one week. Several research projects have been carried out. Currently an ERDF project is under preparation to improve education at the Research Facility by building a new observation and teaching room for the incoming students.

COMMON ELAND FARM

Eland husbandry was carried out similarly to previous years with a total overwintering capacity of 50 adult individuals. At the beginning of 2023, the total number of animals was 35 individuals (2 adult males, 18 adult females, and 15 juveniles under 2 years of age). We needed to cull one male individual (due to the high number of male individuals in the herd) and one old female individual (due to her bad condition). One adult male was sold to a private breeder for breeding outside the CZU. We also encountered several lethal injuries in some individuals due to the insufficient state of the inner structures in the barn, which we have been calling to be reconstructed for several years.

A total of 8 calves were born during the year 2023 and continued to be weighed and measured regularly at monthly intervals to monitor

growth and health status. At the end of 2023, the number of animals was 29 individuals (1 adult male, 2 sub-adult males, 15 adult females, and 12 juveniles animals up to 2 years of age). The number of animals is currently kept lower than in previous years for we expect the reconstruction of the Facility at the beginning of 2025. In certain stages of the reconstruction the animals will have to be closed inside the barn and the lower number of animals prevents the possibility of conflicts between the individuals.

GUANACO FARM

We entered 2023 with a population of 12 individuals. In the breeding group in the upper pasture there was 1 breeding male, 6 females of reproductive age and 5 young animals. In May a new male was brought from Prague Zoo. This new male, along with one of the 6 females and the 5 young animals, was moved do the lower pasture and we thus created a second breeding group. In November a new female was brought in and was also placed in the lower pasture group. At the end of 2023, there was 17 individuals in total (3 males, 8 females of reproductive age, and 5 young animals). We lost one animal probably due to coccidiosis. A new handling box is planned to enable regular handling of the animals as in the case of Elands. In the paddocks, the transformation of a non-productive apple orchard into a high-stemmed mixed orchard continued.

The Academic Senate

In 2023, elections to the FTZ Academic Senate (FTZ AS) took place. New members of the FTZ AS were elected between 16. 5. and 17. 5. 2023 as follows: Ing. Barbora Motýlová, Bc. Miroslav Mulko and BSc. Natálie Šimáčková as student members, and doc. Dr. Tatiana Alexiou Ivanova, prof. h. c., Ing. Tamara Fedorova, Ph.D., Ing. Johana Rondevaldová, Ph.D., prof. Ing. Ladislav Kokoška, Ph.D., Olga Leuner, Ph.D., Ing. Johana Rondevaldová, Ph.D. and Ing. Vladimír Verner, Ph.D. as academic staff members. The first meeting took place on 9. 6. where the FTZ budget for 2023 was approved, along with the procedure for the opening of the supplementary round of admission, WLPMC study programme re-accreditation, and the multiple degree form of the Tropical Forestry and Agroforestry study programme. The budget for the Internal Grant Agency of the FTZ was approved outside the session per rollam at the beginning of July.

The 2nd meeting was held on 27. 9. 2023 and the FTZ financial report from 2022, admission procedures to Bachelor's, Master's, and PhD study programmes, and study fees for study programmes in the English language were approved. Moreover, FTZ investment plans, the position of vice-deans in the management of the Faculty, greater transparency within the Faculty in decision-making processes, and the absence of English versions of the Faculty's internal regulations were discussed. Finally, the commission for the CZU Academic Senate (CZU AS) elections was established, and the organization of, and schedule for the elections were agreed.

On 13th October, the FTZ Annual Academic Community meeting as part of the Day with the Faculty was held. A report on the activities of the FTZ AS and the Dean's report were presented at the event. Elections to the CZU AS took place from 8.11. to 14. 11. 2023 and the following FTZ members were elected: Ing. Barbora Motýlová, Bc. Tereza Grégerová, Ing. Tamara Fedorova, Ph.D., Ing. Radim Kotrba, Ph.D. and Ing. Johana Rondevaldová, Ph.D. The year 2023 was closed by per rollam voting when RNDr. Jiří Černý, Ph.D. was approved as a new faculty member of the Council of Higher Education Institutions.

FTZ Laboratories

FTZ has a total of nine laboratories, which are used not only by academic staff but also by students. They use the laboratories to solve their Bachelor, diploma and dissertation theses and thus gain valuable skills and experience. The laboratories are also used for teaching and are often presented at open day events for both study applicants and the public.

THE LABORATORY OF ETHNOBOTANY AND ETHNOPHARMACOLOGY

The Laboratory of Ethnobotany and Ethnopharmacology (LEE) focuses on the study of the chemistry and bioactivity of underutilised (neglected) crops of tropical and subtropical origin. Species used by native peoples in traditional folk medicinal systems are plants of special interest. Particular research activities involve ethnobotanical inventory studies, the evaluation of (ethno)pharmacological properties, and chemical and nutritional analyses of plant materials focused mainly on the identification and isolation of their bioactive components.

THE LABORATORY OF FOOD PROCESSING TECHNOLOGIES

This laboratory focuses on the study of the technological aspects of food processing, with an emphasis on their applicability in the tropical



areas of the developing world. A priority of our research is food preservation by drying, using simple and economically feasible techniques to support renewable energy sources (e.g. solar drying, solar cooking). The application of different pretreatments is investigated before drying as well as the effect of these pretreatments on the organoleptic properties of the final product.

THE LABORATORY OF BIOFUELS

This laboratory focuses on the study of biomass – a promising renewable energy source with great potential. The purpose of this operation is to research the properties of solid biofuels (pellets and briquettes) made of different types of biomass and mixtures thereof, including interesting energy crops and agricultural waste. The Biofuels Laboratory is fully equipped with modern equipment such as a calorimeter, a muffle furnace, a laboratory oven drier, a vibrating device for determination of particle size distributions, and a flue gas analyser.

THE FTZ HERBARIUM

The FTZ Herbarium is part of the Department of Crop Sciences and Agroforestry. It is affiliated with the Tropical Botany and Ethnobiology Lab (TRIBE) team. The Herbarium in conjunction with the Botanic Garden forms FTZ's primary facility for research and education in tropical botany and agronomy. A herbarium is a scientific reference collection of permanently preserved plant specimens for species' identification and is also useful for the determination of the geographical distribution, abundance, habitats, and flowering and fruiting periods of species. The FTZ Herbarium is a collection focused on useful tropical plant species, including major and minor crops and useful wild plants.

THE LABORATORY OF PLANT TISSUE CULTURES

The Laboratory of Plant Tissue Cultures focuses on research into *in vitro* cultures of plants from tropical and subtropical regions with a specialisation in the breeding, plant propagation, and *in vitro* conservation of plant genetic resources. Our main research objectives are focused on the optimisation of micropropagation technology (nodal and apical cultures, the formation of adventitious shoots, indirect organogenesis and somatic embryogenesis), the induction of polyploidy, the *in vitro* conservation of plant genetic resources (medium-term conservation, microtuberisation), and the study of somaclonal variability of *in vitro* regenerants.

THE LABORATORY OF MOLECULAR GENETICS

The laboratory is fully equipped for DNA extractions from various types of tissue, standard PCR techniques including real-time PCR, visualisations by electrophoresis, and other related activities. The laboratory has been newly equipped with a real-time PCR thermocycler and an automatic pipetting robot, which are mainly used for teaching quantitative PCR.

A separate laboratory room for DNA extraction from non-invasive samples has also been newly introduced to reduce contamination in analyses. The animal research working group has long been involved in all aspects of gene flow in populations, and studies have been carried out on population structure detection, hybridisation monitoring, and phylogenetic analyses in selected species. In this laboratory, students from the Department of Tropical Crops and Agroforestry are working on the genetic diversity of both more and less well-known agricultural crops and agroforestry tree species, mainly from Latin America and Africa. This research mainly focuses on assessing the impact of various

factors such as domestication, deforestation, habitat fragmentation, breeding programmes, etc. on the genetic diversity of the species under study.

THE LABORATORY OF ANIMAL SCIENCE

The Laboratory of Animal Science studies biological materials of animal and animal feed origin, using simple and economically feasible techniques, focusing on their applicability in tropical regions of the developing world. Primary research activities within the laboratory include the monitoring of blood biochemical parameters, coprological investigations, basic sperm evaluation, and chemical composition and mineral analyses of feedstuffs and faeces. Incorporated is the Behavioural Studies Laboratory, equipped with a number of types of behavioural evaluation software. The Laboratory of Animal Science also maintains a collection of equipment for animal fieldwork studies.

THE LABORATORY FOR DETECTION AND CHARACTERISATION OF PATHOGENS

The laboratory is fully equipped for routine and secure work with biological samples potentially containing pathogenic microorganisms (BSL2) including equipment for the extraction of nucleic acids (DNA and RNA) from such samples and for further detection of specific nucleic acids by (RT-q) PCR and their sequencing by nanopore sequencer. Further, immunological assays such as ELISA and basic microbiological experiments can be performed in the laboratory. The laboratory is primarily used by the "e4 research group", which uses it to study the ecology, evolution, emergence, and epidemiology of viral zoonoses and vector-borne diseases.

THE BIOGAS RESEARCH TEAM LABORATORY (BRT-LAB)

The BRT-Lab focuses on research into anaerobic digestion processes. It is affiliated with the Biogas Research Team. Within the framework of the laboratory, it is possible to conduct experiments on several laboratory stands: a biogas generation and digestion of organic waste and plant residues unit, and a laboratory stand for biotesting the ecological effect of digestates on biological systems.



Faculty in numbers

TAB 1.2 NUMBER OF STUDENTS IN 2023

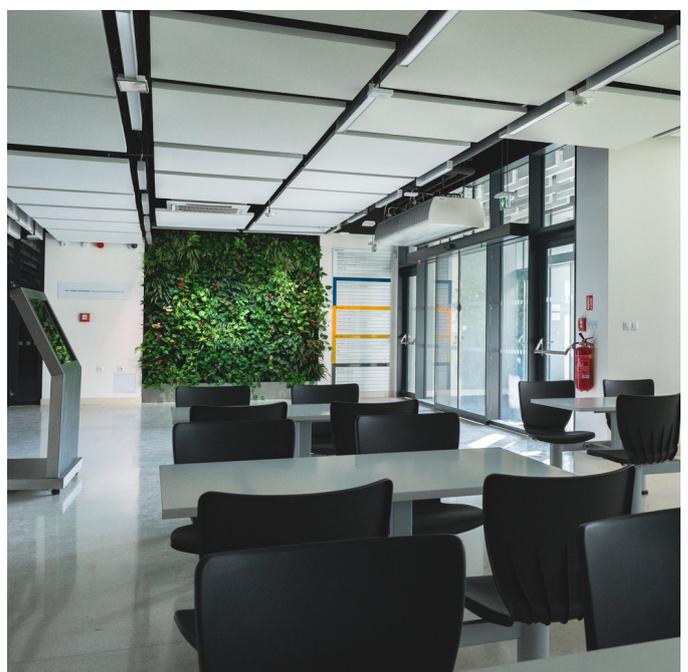
Bachelor's studies	248
Master's studies	160
Doctoral studies (in person)	81
Doctoral studies (combined)	9

TOTAL 498

TAB 1.3 NUMBER OF EMPLOYEES IN 2023

	Absolute number	Recalculation by FTE
Professors	5	5.0
Extraordinary Professors	1	1.0
Associate Professors	9	8.5
Professors Assistants	16	12.5
Research and Science Staff	5	3.7
Others (Administrative and Operational Staff)	46	33.17

TOTAL 82 63.87





Studies

Study at the FTZ

Two Bachelor's programmes (one in Czech, the other in English) and nine Master's programmes (in English only) cover many agricultural issues in developing countries, including rural development. In 2023, the Faculty offered three Doctoral programmes (taught only in English). Thanks to the out-of-European focus of the activities of the entire Faculty, the offer of programmes also reflects the possibilities of employment for graduates outside the territory of the Czech Republic. In 2023, the Faculty introduced a new fully online study programme, Tropical AgroEcology.

The programme was successfully accredited as the first online study programme at the university.

Interest in studying at the Faculty is mainly confirmed by the fact that the number of applicants for the Faculty has been increasing steadily. Notably, there has been an increase in the number of students who fully fund their tuition fees. However, the increase in the total number of Bachelor and Master students in the last three years slowed due to a stricter admissions process. In 2019, there were 382 Bachelor and Master students; in 2020, 458; in 2021, 553; in 2022 503 students and in 2023, 408 Bachelor and Master students.

Undergraduate study programmes

In 2023, the FTZ offered two accredited Bachelor's programmes:

TROPICKÉ ZEMĚDĚLSTVÍ (TROPICAL AGRICULTURE – TZ)

The graduate profile of the Tropical Agriculture study programme represents a versatile, practically equipped professional course in tropical agriculture. The programme covers both tropical crop production and animal husbandry. A basic knowledge of technology and agricultural economics complements this. Unlike the original

accreditation, however, students can choose their preferred course of study and specialize in crop or livestock production due to the larger number of electives. The programme is designed in line with environmental protection and the need to address poverty and food security in developing countries. This programme is taught in the Czech language.

INTERNATIONAL COOPERATION IN AGRICULTURAL AND RURAL DEVELOPMENT (ICARD)

The programme is designed with the objectives of agricultural development and environmental protection, and at the same time, the need to tackle poverty and ensure food security in developing countries along with UN SDGs.

The profile of a graduate capable of preparing, managing and evaluating a development project requires that the study be based on the following foundations: the graduate's detailed knowledge and skills in project management, international communication and human resource management in a multicultural environment; a basis in biological disciplines focused on primary agricultural production; compulsory internship in non-profit organizations, state institutions and private companies engaged in international development or business projects in developing countries. The programme is taught in English.

Master's study programmes

In 2023, the FTZ offered nine Master's study programmes taught exclusively in English.

AGRICULTURAL SCIENCES AND FARMING SYSTEMS IN THE TROPICS AND SUBTROPICS – DOUBLE DEGREE

The Double Degree programme between the Czech University of Life Sciences Prague and the University of Hohenheim (Germany) allows students with a Master's degree in the area of agriculture to live abroad and to study in a cosmopolitan and multicultural environment, thus

increasing the job opportunities in a growingly globalized context. The double degree offers an additional benefit for the students by: a) an increased selection of modules offered on tropical agriculture at both universities, b) the acquirement of soft skills in different teaching environments as well as cultural backgrounds, and c) scientific work under the supervision of two academics from two different universities.

AGRI-FOOD SYSTEMS AND RURAL DEVELOPMENT

The programme aims to prepare graduates to work in agri-food systems and sustainable rural development, specifically focusing on developing countries and tropical areas. The programme is based on an interdisciplinary approach focused on food production systems in the tropics, food processing, and suitable agricultural technologies based on energy resources. Food security is an essential component of the programme, and it plays a crucial role in rural development in all developing countries.

INTERNATIONAL DEVELOPMENT AND AGRICULTURAL ECONOMICS

This two-year Master's study programme explores the issues that underpin the current debate on the economic and policy aspects of sustainable development of farming and rural systems, household livelihoods and related natural resource conservation and provides practical and methodological tools for working at the interface of economic growth, inclusion and environmental stability. The programme's graduates are a valuable asset to national government and scientific bodies, international and national NGOs, consultancies, contractors, international agencies, and donors, or they may aspire to pursue a career in farming.

GLOBAL FORESTRY – MULTIPLE DEGREE

Global Forestry is a two-year English language world-class Erasmus Mundus Msc. programme that prepares graduates to deal with forestry's tremendous contemporary challenges and potentials in medium and low-income countries. A consortium of five European Universities with extensive experience in global forestry offer the programme:

- **CZU:** The Czech University of Life Sciences, Faculty of Tropical AgriSciences (Czech Republic)
- **AgroTech Paris:** The Paris Institute of Technology for Life, Food and Environmental Sciences (AgroParisTech), Montpellier and Kourou campuses (France)
- **TUD:** Die Technische Universität, Dresden, Institute of International Forestry and Forest Products, (Germany)
- **UCPH:** The University of Copenhagen, Department of Food and Resource Economics (Denmark)
- **UP:** The University of Padua, School of Agriculture and Veterinary Medicine (Italy)

WILDLIFE AND LIVESTOCK PRODUCTION, MANAGEMENT AND CONSERVATION

In this study programme, students will receive a solid theoretical background in wild and domestic animal production, management, and conservation. The programme primarily focuses on the regions of the Global South, yet the curriculum is also suitable for applicants interested in *ex situ* wildlife management, i.e. work in a European zoo. Theoretical knowledge is combined with practical training and fieldwork units. The programme offers Sustainable Animal Production (SAP) and Wildlife Management and Conservation (WMC) specialisations.

TROPICAL AGROECOLOGY

Tropical Agroecology focuses on studying interactions between plants, animals, humans and the environment within broader tropical and subtropical agricultural systems, considering the socio-economic aspects needed to develop sustainable and equitable food systems that support the Sustainable Development Goals. Agroecology combines science with traditional practices to provide long-term solutions to agricultural issues that empower local communities and producers.

TROPICAL CROP MANAGEMENT AND ECOLOGY

The programme aims to prepare professionals for the next generation who need to address challenges closely tied to the tropical and subtropical agricultural systems, biodiversity conservation, nutrition, and human health, as well as approaches in countries of the Global South.

TROPICAL FARMING SYSTEMS

The programme is oriented towards modern farming systems in tropical regions of developing countries. The study programme covers the issue of crop production with an emphasis on the long-term sustainability of farming systems and surrounding natural ecosystems. In this programme, students pay for their tuition. However, the programme offers a wide range of specialisations through elective courses and general study flexibility.

TROPICAL FORESTRY AND AGROFORESTRY

The study programme is based on an interdisciplinary approach to deepen knowledge and practical skills related to forestry and rural development in countries of the Global South. Students are prepared for forestry and wood processing activity in the countries of the tropical and subtropical zones. Great emphasis is also placed on related rural development in these countries.

Doctoral studies

During doctoral studies, students are expected to acquire an understanding of their chosen subject area, develop advanced research skills, and conduct original research that contributes to the knowledge and understanding of the field. This may involve designing and conducting experiments, analysing data, developing theories, or applying existing knowledge to new problems or contexts. In addition to skills, doctoral students are also expected to display strong critical thinking, analytical, and communication skills. This includes the ability to evaluate and synthesize complex information, communicate research findings to both academic and non-academic audiences, and collaborate with others in their field. Ultimately, the goal of studies is to prepare students to become independent scholars and experts in their field, capable of bringing new knowledge and insights to the broader academic community. Besides the research activities, the Ph.D. students at the FTZ are encouraged to publish their results in peer-reviewed journals and participate in teaching and science popularisation. They also undertake a doctoral examination including the defence of their doctoral thesis according to their ISP (Individual Study Plan). Currently, the FTZ offers studies in three study programmes.

TROPICAL AGROBIOLOGY AND BIORESOURCE MANAGEMENT

Programme guarantor: Prof. RNDr. Pavla Hejčmanová, Ph.D.

Education area: 37 – agriculture (50%), 3 – biology, ecology and environment (50%)

ISCED-F: 0888

Accreditation valid: November 18, 2029

Language of study (accreditation): English

Standard length of study (maximum length of study): 4 years (8 semesters)

Minimum number of credits: 240

Possibility of studying in a combined form: yes

Tuition fee (for 1 year of study): CZK 6,000

TABM DOCTORAL DEGREE BOARD:

Chairman of the Board:

prof. RNDr. Pavla Hejčmanová, Ph.D.

External members:

doc. RNDr. David Honys, Ph.D.

prof. Lukáš Kratochvíl, Ph.D.

Ing. Martin Kulma, Ph.D.

CZU members (excluding FTZ):

doc. Ing. Jaroslav Havlík, Ph.D.

doc. Ing. Pavel Klouček, Ph.D.

prof. Mgr. Ing. Markéta Sedmíková, Ph.D.

Internal members:

prof. Ing. Jan Banout, Ph.D.

doc. Francisco Ceacero Herrador, Ph.D.

RNDr. Jiří Černý, Ph.D.

Ing. Olga Leuner, Ph.D.

prof. Ing. Bohdan Lojka, Ph.D.

doc. Tersia Needham, Ph.D.

prof. RNDr. Irena Valterová, CSc.

SUSTAINABLE RURAL DEVELOPMENT

Programme guarantor: Prof. Ing. Jan Banout, Ph.D.

Education area: 37 - agriculture (100%)

ISCED-F: 0888

Accreditation validity: 17. 12. 2028

Language of study (accreditation): English

Standard length of study (maximum length of study): 4 years (8 semesters)

Minimum number of credits: 240

Possibility of studying in a combined form: yes

Tuition fee (for 1 year of study): CZK 6,000

SRD DOCTORAL DEGREE BOARD:

Chairman of the Board:

prof. Ing. Jan Banout, Ph.D.

External members:

doc. RNDr. Ing. Tomáš Ratinger, Ph.D.

Ing. Anne Rohlík, Ph.D.

CZU members (excluding FTZ):

prof. Ing. Lukáš Kalous, Ph.D.

Internal members:

doc., Dr., Dr. Miroslava Bavorová

Ing. Olga Leuner, Ph.D.

Ing. Jana Mazancová, Ph.D.

doc. Ing. Hynek Roubík, Ph.D.

Ing. Klára Urbanová, Ph.D.

Ing. Vladimír Verner, Ph.D.

AGRICULTURE IN TROPICS AND SUBTROPICS

Programme guarantor: Prof. Ing. Bohdan Lojka, Ph.D.

Education area: 37 - agriculture (100%)

ISCED-F: 0888

Language of study (Accreditation): English

Accreditation valid: November 18, 2029

Standard length of study (maximum length of study): 3 years (6 semesters)

Minimum number of credits: 180

Possibility of studying in a combined form: yes

Tuition fee (for 1 year of study): CZK 80,000

ATS DOCTORAL DEGREE BOARD:

Chairman of the Board:

prof. Ing. Bohdan Lojka, Ph.D.

External members:

doc. RNDr. David Honys, Ph.D.

prof. Lukáš Kratochvíl, Ph.D.

Ing. Martin Kulma, Ph.D.

CZU members (excluding FTZ):

doc. Ing. Jaroslav Havlík, Ph.D.

doc. Ing. Pavel Klouček, Ph.D.

prof. Mgr. Ing. Markéta Sedmíková, Ph.D.

Internal members:

prof. Ing. Jan Banout, Ph.D.

doc. Francisco Ceacero Herrador, Ph.D.

RNDr. Jiří Černý, Ph.D.

prof. Dr. Ing. Eloy Fernández Cusimamani

prof. RNDr. Pavla Hejčmanová, Ph.D.

Ing. Olga Leuner, Ph.D.

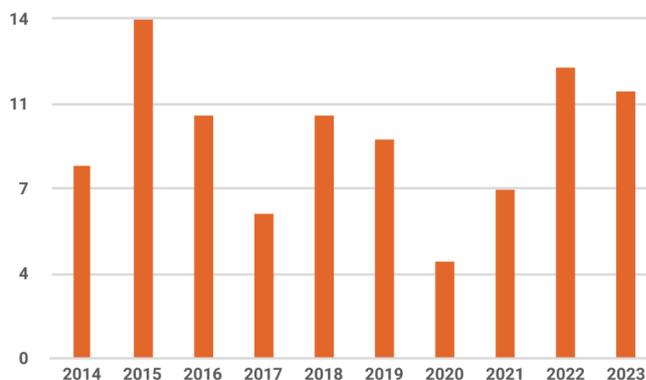
doc. Tersia Needham, Ph.D.

prof. RNDr. Irena Valterová, CSc.

Ing. Vladimír Verner, Ph.D.

All three doctoral study programmes at the FTZ have undergone an internal accreditation process and are approved by the Council for Internal Evaluation of the CZU. The topics of dissertations are approved by the DDB (Doctoral Degree Board), and applicants are admitted to study on the basis of a comprehensive evaluation. During their studies, students undergo department attestations twice a year, where they have to show the fulfilment of their ISP (individual study plan), and progress on their research work.

GRAPH 2.1 THE NUMBER OF PH.D. GRADUATES IN THE LAST 10 YEARS



From the graph it is obvious that the number of Ph.D. graduates decreased in the pandemic year 2020. In the following years, the number of graduates increased again.

TAB. 2.1 NUMBERS OF GRADUATES IN 2023

ZS-TABM – 4x
ZS-SRD – 5x
TABM – 1x
SRD – 1x

TAB. 2.2 NUMBER OF PH.D. STUDENTS - 31.10.2023

Year of study	D-ATS	D-SRD	D-TABM	D-ZS-TABM	Total
1.	1	10	12	0	23
2.	0	9	11	0	20
3.	0	5	5	0	10
4.	0	16	8	13	37
Total	1	40	36	13	90

The table shows the detailed distribution of doctoral students by programme and type of study.

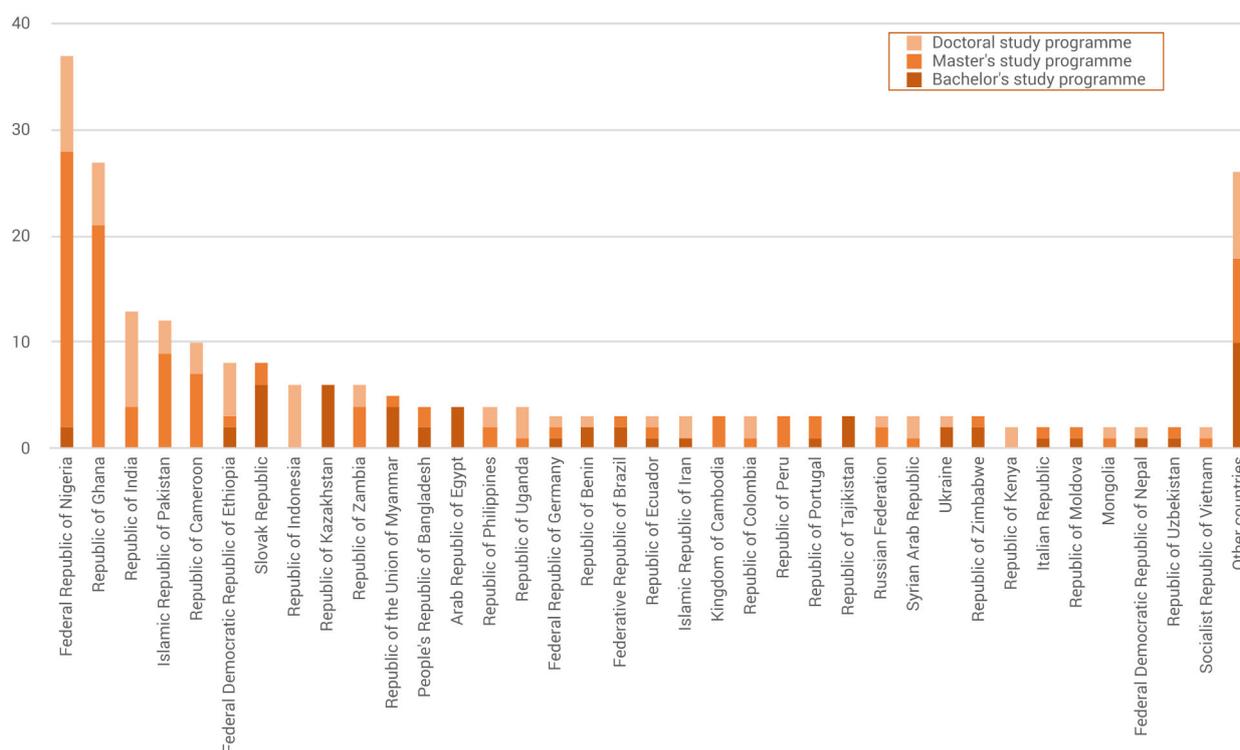
Students in accredited study programmes

The total number of Bachelor's and Master's students in 2023 was 408 (105 students less than in 2022). All students studied full-time forms of study. In addition, 16 students studied in lifelong learning – at the University for the "Third Age". The overviews below contain a review of all study programmes.

More than half of the students were international students, most of whom were students from developing countries. A multicultural environment is maintained, enabling the mutual interaction of Czech and international students.

Most foreigners in 2023 were from Nigeria, Ghana, India, Pakistan, Cameroon, Slovakia, Indonesia, Kazakhstan and Zambia (see the graph 2.2. All figures below are from 31st October 2023).

GRAPH 2.2 NUMBERS OF FOREIGN STUDENTS BY MOST REPRESENTED COUNTRIES (31.10.2023)



TAB 2.3 TYPE OF STUDY – BACHELOR'S STUDY PROGRAMMES

Year of study	B-ICARD		B-TZE	
	cz	other	cz	other
1.	2	19	67	4
2.	5	11	41	3
3.	18	17	60	1
Total	25	47	168	8

TAB 2.4 TYPE OF STUDY – MASTER'S STUDY PROGRAMMES

Year of study	N-ASRD		N-IDAE		N-TCME		N-TFA		N-TFS		N-WLPMC		N-TAE	
	cz	other	cz	other	cz	other	cz	other	cz	other	cz	other	cz	other
1.	–	10	2	15	6	7	2	5	2	7	6	7	–	1
2.	4	12	2	10	12	7	2	5	2	14	9	10	–	–
Total	4	22	5	25	18	14	4	10	4	21	15	17	0	1

**TAB 2.5 TOTAL NUMBER OF STUDENTS
BACHELOR'S AND MASTER STUDY PROGRAMMES**

Year of study	FULL-TIME STUDY		DISTANT STUDY	
	cz	other	cz	other
1.	87	74	–	1
2.	78	72	–	–
3.	78	18	–	–
Total	243	164	0	1

**TAB 2.6 TOTAL NUMBER OF STUDENTS
DOCTORAL STUDY PROGRAMMES**

Year of study	FULL-TIME STUDY		DISTANT STUDY	
	cz	other	cz	other
1.	4	14	2	3
2.	2	17	–	1
3.	–	10	–	–
4.	9	25	1	2
Total	15	66	3	6

TAB 2.7 STUDENTS IN STUDY PROGRAMMES IN ACADEMIC YEARS (31. 10. 2023)

Study programme	2016 / 2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
B-ICARD	51	91	76	63	92	106	85	72
B-TURS	37	7	–	–	–	–	–	–
B-TZE	176	154	164	195	197	234	189	176
N-AFS	23	12	3	–	–	–	–	–
N-ASRD	39	35	41	32	49	48	49	26
N-IDAE	50	59	43	40	50	53	50	30
N-TAE	–	–	–	–	–	–	–	1
N-TCME	39	28	21	12	23	34	44	32
N-TFA	16	11	11	10	12	16	17	14
N-TFS	7	4	2	2	5	20	27	25
N-WLPMC	30	22	27	28	30	42	42	32
Total	4	5	18	4	4	15	503	408

Other educational activities, lifelong learning

Following the strategic goal of the CZU (priority strategic goal 3.1 "Linking educational activities in study with the involvement of students in scientific and research work"), students were involved in the creative activities of the Faculty and especially in research and development projects within their final and seminar papers, and partial assignments on grant projects.

Close cooperation also took place with the application sector in the fields of science and research (collaboration with research institutes, implementation of research for application in the private sphere), development projects (partnerships with companies and non-profit organizations), and teaching (sharing external lecturers in taught

subjects, offers of internships for students in companies and non-governmental organizations involved in international development projects, offers of diploma theses in cooperation with the application sphere).

Since 2013, the subject "Block of Experts" has been introduced in Bachelor's programmes to enable presentations by experts with practical experience. In 2023, this was attended by five international development experts from Czech NGOs, academia, companies and state institutions.

The FTZ regularly opens a lifelong learning course – the University of the “Third Age” – called “Topics for Everyone”.

26 students studied in this programme in 2023. The programme is open once every two years. In addition to lectures and seminars by lecturers from the FTZ, excursions are essential to the programme.

Student support at the faculty

Student counselling is understood to be an integral part of working with students. For this reason, counselling has long been provided in the main areas following the Higher Education Act:

- in the field of study and pedagogy,
- in the psychosocial domain,
- in the field of professional careers,
- in the legal area and
- in the field of access to information.

Counselling is provided through several communication channels: students can obtain the necessary information electronically on the Internet or by e-mail or contact the FTZ specialist counsellor for the given area directly or by phone. Consultation through MS Teams has been recently adopted as well.

The CZU Institute of Education and Counselling coordinates counselling services within the university. The Counselling Center for Students with Special Educational Needs has operated at CZU since 2006. In the case of psychosocial counselling services, these services are provided by the Department of Psychology, Faculty of Business and Economics, CZU.

FTZ mainly supports pedagogical counselling, which involves the staff of the Academic Administration Office, one specialised pedagogical counsellor, the Vice-dean for Education and Quality, and two teachers – coordinators of 1st-year Bachelor's programmes. In addition, there is mutual counselling between students and the Faculty. A group of master's degree students worked as student advisors (ambassadors) in 2023.

International students, in particular, are allowed consultations beyond the regular consultation hours, and one specialised employee of the Faculty's Academic Administration Office is assigned to foreign applicants. In 2021, the Faculty also introduced systematic work by “Student Ambassadors,” assisting foreign applicants and new International students.

At FTZ, exceptionally gifted students are motivated by a system of merit scholarships (a scholarship during their studies and a one-off scholarship for the State Final Examination). The current merit scholarship is CZK 1,500 per month. A total of 81 outstanding students were supported during 2023.

Furthermore, students are motivated by participation in grants from the Internal Grant Agency of the Faculty, where they are involved in scientific teams with doctoral students and teachers. They also implement development projects abroad (approximately 15 to 20 Bachelor's and Master's students per year). They are supported in terms of international mobility associated with their qualification work (support for students going abroad to collect data for their qualification work).

Since 2013, a group of graduates has been introduced within the professional social network LinkedIn, including 185 graduates from 2011-2022 (<https://www.linkedin.com/groups/5062023>). Through this network, the Faculty maintains contact with graduates and offers job possibilities in the international cooperation sector.

Interest in studies at the faculty

In 2023, the Faculty received 470 applications for Bachelor's and 474 for Master's programmes. The number increased significantly during 2018 – 2021. The increase slowed in 2023, primarily for Czech applicants to Bachelor study programmes (see table on the next page). The admission procedure has become more and more selective, and the quality of admitted students increases every year. However, **applicants still face significant problems when entering the study, mainly due to difficulty in obtaining a visa to the Czech Republic for applicants from African countries.**

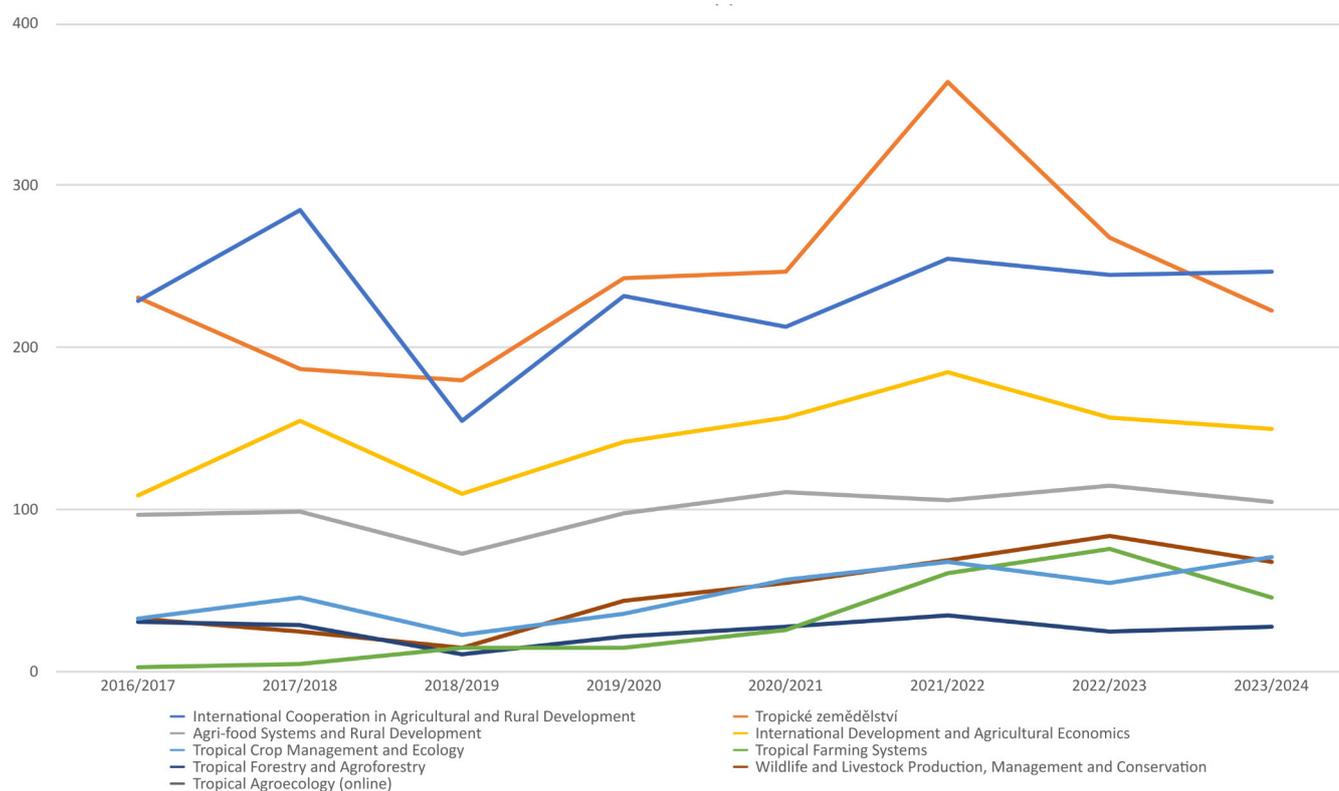
Potential Bachelor's students were addressed mainly through online advertising and traditional media. A limited number also attend secondary schools and preparatory courses. Faculty staff also participated in several seminars and panel discussions in the Czech Republic and abroad, promoting study opportunities at the faculty. The active promotion also took place through the embassies of the Czech Republic in countries where FTZ has partners in universities.

The admission procedure for Bachelor's degree programmes takes into account the previous achievements of applicants in the form of good results in national olympiads and the study average of earlier studies – admission without an entrance exam for Bachelor's degree programmes up to an average of 1.6 (decrease from 1.8 in 2021) from their graduation certificate or the last completed year of high school.



Number of applications

GRAPH 2.3



TAB 2.8 BACHELOR'S STUDY PROGRAMMES

Study programme	2016 / 2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
ICARD	229	285	155	232	213	255	245	247
TZ	231	187	180	243	247	364	268	223
Total	460	472	335	475	460	619	513	470

TAB 2.9 MASTERS'S STUDY PROGRAMMES

Study programme	2016 / 2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
ASRD	97	99	73	98	111	106	115	105
IDAE	109	155	110	142	157	185	157	150
TCMAE	33	46	23	36	57	68	55	71
TFS	3	5	15	15	26	61	76	46
TFA	31	29	11	22	28	35	25	28
WLPMC	33	25	15	44	55	69	84	68
SAP	–	–	–	9	20	31	29	39
WMC	–	–	–	35	35	38	55	29
TAE (online)	–	–	–	–	–	–	–	6
Total	306	359	247	401	489	593	596	474

Statistics admission procedure

ADMISSION PROCEDURES FOR BACHELOR'S PROGRAMMES

Entrance exams were organised and managed by the Faculty. Entrance exams for both programmes comprise two subjects - languages and one specialised subject. The entire entrance exam course, including the specialised test, was in English as part of the ICARD programme. For applicants who could not prove their knowledge of the Czech language by a school-leaving examination in Czech, our TZ programme was followed by a written interview in the Czech language focused on assessing the level of language skills required to study the programme. Applicants were admitted to study at the FTZ according to the points obtained during the entrance exam up until the capacity of the study programme. The minimum limit for admission was at least 20 (an increase from 2021) on each test and meeting the condition of an oral language interview for foreign applicants as per the TZ study programme. Sample tests are published on the Faculty website.

Admissions committees were proposed by the programme guarantors and approved by the Board of the Dean of the Faculty.

ADMISSION PROCEDURE FOR MASTER'S PROGRAMMES

Applicants had to provide a CV, an annotation of their Bachelor's thesis and a motivation letter in English for all study programmes. The entrance exams involved an English interview focused on the programme content. In the oral interviews for all programmes, the candidate had to achieve at least 60 points out of 100 according to the criteria set by the examination committee for each programme – i.e. according to the level of professional and standard English, an assessment of their cross-sectional knowledge, previous experience, experience in the field, and the focus and quality of their Bachelor thesis. Applicants were admitted to study at the FTZ according to the evaluation of the points obtained in the entrance exam up until the capacity of the study programme.

Admissions committees were also proposed by the programme guarantors and approved by Board of the Dean of the Faculty.

Detailed statistical overviews, based on the Decree of the Ministry of Education, Youth and Sports No. 343/2002 Coll., giving the procedure and conditions for publishing data on university admission procedures, are posted on the official board of the Faculty.

TAB 2.10

Study programme / Specialisation	Number of applications	Complete	Attended	Terms met	Terms not met	Admitted in the first round	Admitted in total	Commented study
B-ICARD International Cooperation in Agricultural and Rural Development	247	215	244	54	190	54	54	18
B-TZE Tropické zemědělství	223	221	163	116	46	116	116	72
N-ASRD Agri-food Systems and Rural Development	105	85	104	29	74	29	30	8
N-IDAE International Development and Agricultural Economics	150	127	145	36	109	36	36	13
N-TAE Tropical Agroecology	6	5	6	6	–	6	6	1
N-TCME Tropical Crop Management and Ecology	71	58	66	32	34	32	32	9
N-TFA Tropical Forestry and Agroforestry	28	22	27	14	13	14	14	4
N-TFS Tropical Farming Systems	46	40	44	27	17	27	27	2
N-WLPMC Wildlife and Livestock Production, Management and Conservation/ SAP Sustainable Animal Production	39	30	38	12	26	12	12	1
N-WLPMC Wildlife and Livestock Production, Management and Conservation/ WMC Wildlife Management and Conservation	29	20	27	17	10	17	17	7



Science and Research

Activities of the department in science, research and doctoral studies

The Department for Science, Research and Doctoral Studies provide organisational and administrative support in the following areas:

- the activities of the Faculty's Scientific Board,
- habilitation and professorial procedures,
- distribution of R&D-related information,
- the organisation of support for scientific research activities at the Faculty,
- the organisation of the Internal Grant Agency of FTZ (IGA)
- the administrative management of doctoral studies.

Professorship and habilitation procedures

The FTZ is entitled to carry out procedures for the appointment of full professors and habilitation procedures in the field of "Tropical Agriculture and Ecology". In these procedures, the teaching and scientific qualifications of a candidate who is a distinguished and recognised personality in his/her field are evaluated.

Professorship procedures in 2023:

- None.

Habilitation procedures in 2023:

- RNDr. Jiří Černý, Ph.D. – habilitation procedure successfully conducted at the level of the Scientific Board of the FTZ.

FTZ scientific board members

TAB 3.1 FTZ MEMBERS

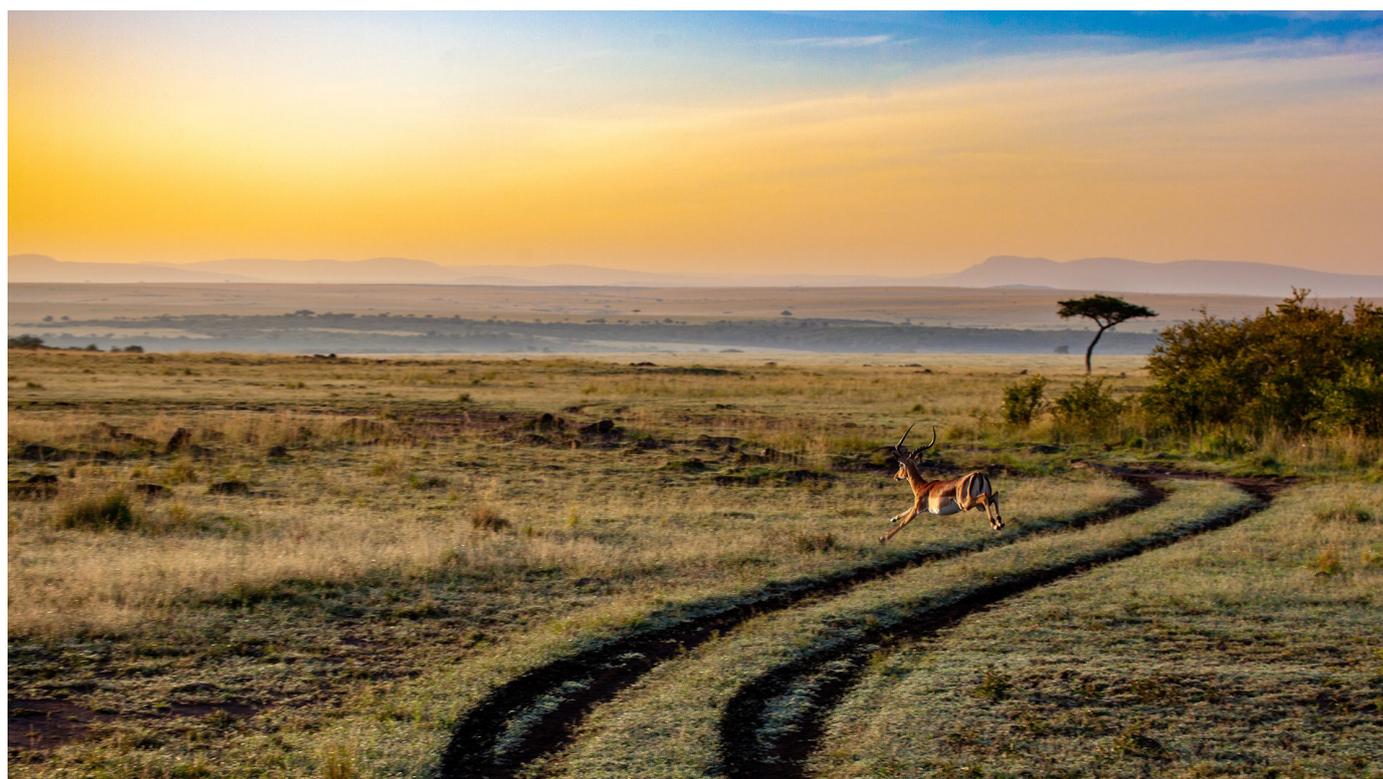
prof. Dr.ir. Patrick Van Damme	Chairman, Dean of the Faculty of Tropical AgriSciences
prof. Ing. Jan Banout, Ph.D.	Vice-dean for Science, Research and Doctoral Study, Department of Sustainable Technologies
doc. Ing., Dr. sc. agr., Dr. sc. habil. Miroslava Bavorová	Department of Economics and Development
doc. Francisco Herrador Ceacero, Ph.D.	Department of Animal Science and Food Processing
prof. Dr. Ing. Eloy Fernández	Department of Crop Science and Agroforestry
prof. Ing. Pavla Hejčmanová, Ph.D.	Department of Animal Science and Food Processing
prof. Ing. Ladislav Kokoška, Ph.D.	Department of Crop Science and Agroforestry
prof. Ing. Bohdan Lojka, Ph.D.	Department of Crop Science and Agroforestry
prof. RNDr. Irena Valterová, Ph.D.	Department of Crop Science and Agroforestry

TAB 3.2 EXTERNAL MEMBERS (OUTSIDE THE CZU)

prof. RNDr. Daniel Frynta, Dr.	Department of Zoology, Faculty of Science, Charles University
prof. Dr. RNDr. Oldřich Lapčík	Department of Chemistry of Natural Compounds, Faculty of Food and Biochemical Technology, The University of Chemistry and Technology, Prague
doc. Ing. Jan Chyský, CSc.	Division of Electrotechnics, Faculty of Mechanical Engineering, The Czech Technical University in Prague
doc. RNDr. Josef Novotný, Ph.D.	Department of Social Geography and Regional Development, Faculty of Science, Charles University
prof. RNDr. Vojtěch Novotný, CSc.	Department of Ecology, The Biology Centre of the Czech Academy of Sciences
doc. Mgr. Zdeněk Opršal, CSc.	Department of Development and Environmental Studies, Faculty of Science, Palacký University Olomouc
doc. RNDr. Pavlína Maloy Řezáčová, Ph.D.	The Institute of Organic Chemistry and Biochemistry of The Czech Academy of Sciences

TAB 3.3 CZU MEMBERS

doc. Ing. Vilém Jarský, Ph.D.	Faculty of Forestry and Wood Sciences, CZU
prof. Dr. Ing. František Kumhála	Faculty of Engineering, CZU
prof. PhDr. Michal Lošťák, Ph.D.	Faculty of Economics and Management, CZU
Ing. Kateřina Černý Pixová, Ph.D.	Faculty of Environmental Sciences, CZU
prof. Mgr. Ing. Markéta Sedmíková, Ph.D.	Faculty of Agrobiolgy, Food and Natural Resources, CZU



Publications and results in R&D

The Faculty of Tropical AgriSciences is a unique workplace in the Czech Republic which aims to become a leader in the field of research in tropical agrisciences. Our activities have been directed towards this goal for a long time, in addition to the whole spectrum of research activities, also our cooperation with foreign partners and emphasis on increasing the number and quality of outputs of research activities. In a highly competitive environment, such as the scientific space, it is not only results achieved that matter, but also their presentation in scientific publications. The FTZ has developed a support system for staff and students to publish their results at conferences and in high-quality scientific journals.

Students are motivated by our extraordinary record in promoting the authorship of scientific publications. The required qualifying work includes, in addition to a classical thesis, an annotated scientific article accepted for publication in a peer-reviewed journal with an impact factor (IF). The student must be the first author and the publication must be thematically related to the approved topic of the dissertation thesis. In addition to the traditional dissertation, the recognised form of a Ph.D. thesis defence is a set of papers, which must include at least three articles accepted for publication in an IF scientific journal. The student must be the first author of at least two articles and may be in the order of authorship on the other. All publications must be thematically related to the approved dissertation topic.

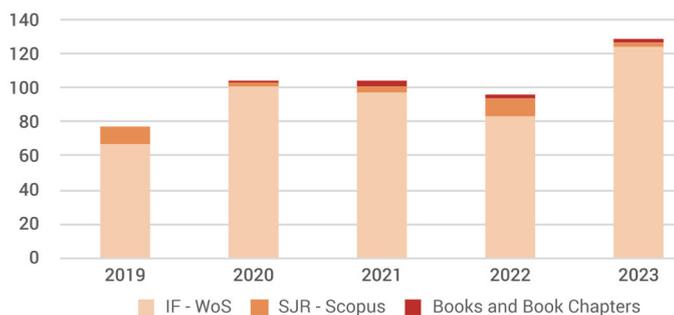
Staff are incentivised by a personal evaluation system which is updated annually according to the performance of academic staff members. In this system, this personal evaluation comprises two

components: teaching (monitored in the form of STAT points and thesis supervision) and publications. For publications, the number of publications, the quality of the journal (quartile) and the number of authors and the author's position in the author team (the role of the corresponding author is also taken into account) plays a role. With changes in the evaluation of research organisations and the evaluation of programmes of targeted support for research, development and innovation required by the M17+ Methodology, the incentive system for creative activity at the FTZ will now also need to be modified by adding an element related to grant activity.

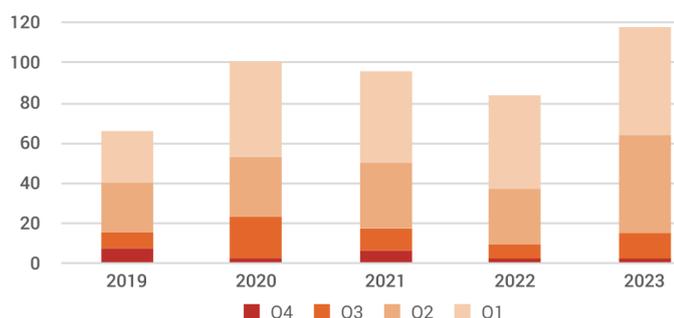
In 2023, a total of 127 articles were published in journals indexed in the Web of Science (WoS) and Scopus databases. 124 articles have been published in WoS journals with IF, and 3 articles were published in Scopus journals with SCImago Journal Rank (SJR) – see the *graph 3.1* which gives an overview of the evolution of the number of articles with IF/SJR and monographs over the last five years. In addition, 2 book chapters were published and one scientific conference organized (MCYR). Furthermore, 21 other scientific outputs were recorded, which mainly encompassed scientific conferences and presentations at scientific symposiums.

Of the total of 124 publications with IF (117 with designated Q), 87% were published in journals ranked in Q1 and Q2 according to their IF (WoS). In absolute numbers, this was 102 publications (53 and 49 Q1 and Q2, respectively). The *graph 3.2* shows the distribution of published papers by quartiles and an overview over the last five years. The data shows a decrease in a total number of IF papers in the last year.

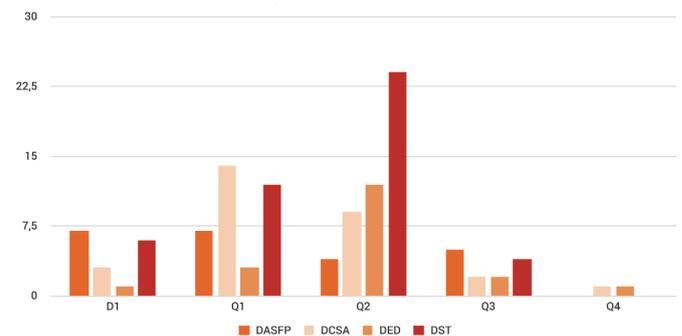
GRAPH 3.1 NUMBER OF PUBLICATIONS IN THE LAST 5 YEARS



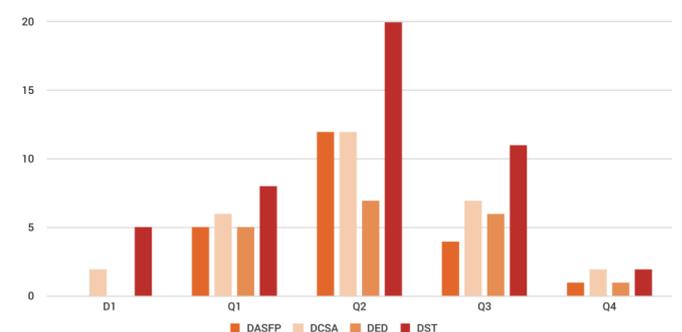
GRAPH 3.2 DISTRIBUTION OF PUBLISHED PAPERS OVER QUARTILES



GRAPH 3.3a DISTRIBUTION OF PUBLISHED PAPERS OVER QUARTILES BASED ON IF (WOS)



GRAPH 3.3b DISTRIBUTION OF PUBLISHED PAPERS OVER QUARTILES BASED ON AIS (FORD)



However, the quality remains high in favour of Q1 and Q2 journals. 1Q publications also include 17 D1 (first decile publications).

The evaluation of research and programmes of targeted support for research, development and innovation based on M17+ Methodology is moving away from the IF as one of the important indicators of the quality of publications and instead introduces the AIS (Article Influence Score). In an AIS, journals can still be divided into quartiles according to their WoS categories, but in the full 17+ Methodology FORD (Fields or Research and Development) divisions are required to be used. The *graph 3.3* shows a comparison of the distribution of papers published in 2023 in quartiles based on IF (WOS) and AIS (FORD) respectively.

An important performance indicator is the number of published papers per academic staff member. The *chart 3.4* shows this data compared to the academic FTE (Full-Time Equivalents) in each FTZ department.

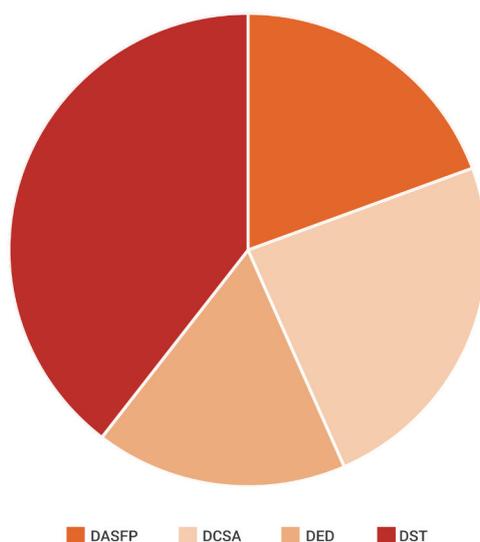
To maintain high-quality publications in the long term, it is essential that the publication outputs are distributed equally among all academic staff.

We could clearly observe this trend at the Faculty in the past. One of the main goals is that each academic staff member of the Faculty should have at least one publication in an IF per year. Unfortunately, an alarming fact was noted in 2023 when 14% of academic staff did not publish any paper in WOS indexed publications. However, it needs to be mentioned, that this has decreased from 2022, when 25% of staff were without any publications that year.

Furthermore, as visible in the *graph 3.5*, it is worth noting the lowest output per member of academic staff and the highest output per member of academic staff across departments. It is clear that in DASFP – Department of Animal Science and Food Processing the average output is 2.7 publications per member of academic staff and the highest output is visible at the DST – Department of Sustainable Technologies, where it is 5.7 publications per member of academic staff.

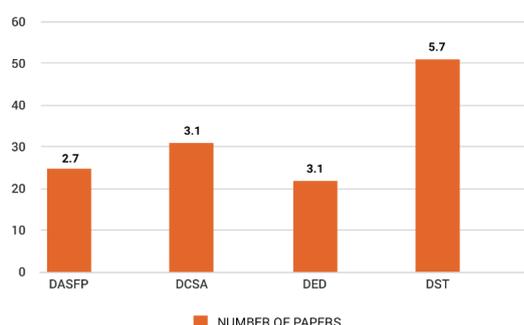
On the other hand, it is also important to note that the average output of publications per member of academic staff remains the highest in the university.

CHART 3.4 DISTRIBUTION OF PUBLICATION IN 2023 (WOS) AMONG DEPARTMENTS

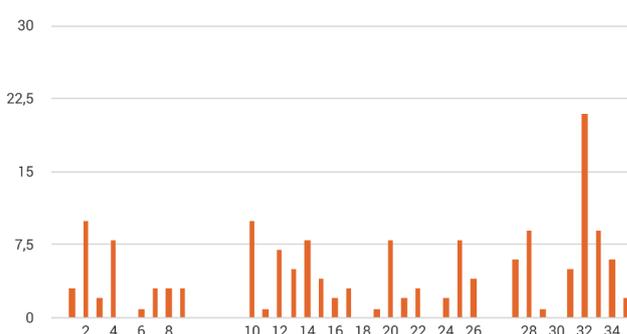


DASFP – Department of Animal Science and Food Processing
 DCSA – Department of Crop Science and Agroforestry
 DED – Department of Economics and Development
 DST – Department of Sustainable Technologies

GRAPH 3.5a WOS PUBLICATIONS IN 2023 / DEPARTMENT / AVERAGE PER ACADEMIC STAFF



GRAPH 3.5b DISTRIBUTION OF PUBLISHED PAPERS IN 2023 AT FTA BY INDIVIDUAL ACADEMIC STAFF

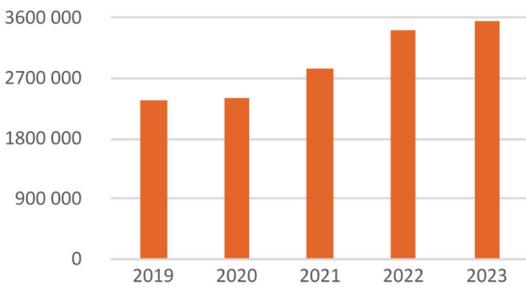


Projects and grants

SPECIFIC UNIVERSITY RESEARCH (SUR)

In 2023, the Faculty of Tropical AgriSciences received funding for Specific University Research (SUR) in the amount of CZK 3,567,493. These funds were used in accordance with the Rules for the Provision of Special Purpose Support for SUR under the Act on Support for Research, Experimental Development and Innovation and were spent in full. The graph to the right shows the evolution of the total subsidy for SUR over the last five years. It can be seen that the amount of funding for SUR FTZ has increased continuously.

GRAPH 3.6 TOTAL SUBSIDY OF SPECIFIC UNIVERSITY RESEARCH AT FTZ FOR THE LAST 5 YEARS (IN CZK)



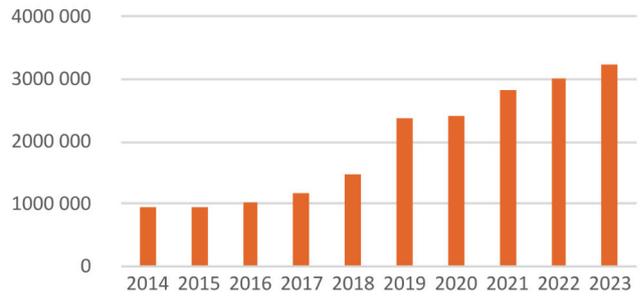
FTZ INTERNAL GRANT AGENCY

The vast majority of SUR funds are managed by the "Internal Grant Agency of the FTZ" (the IGA FTZ). Specific Research is research carried out by research teams that include students enrolled in accredited Master's and Doctoral degree programmes and is directly related to their thesis research and education. IGA FTZ grants aim to strengthen the independent creative activity of students in their respective fields, to intensify the involvement of students in research and project activities, and to help students and academic staff in the creation and cooperation of research teams under the leadership of their supervisors. Project leaders are academic staff members and the number of PhD. and M.Sc. students in each project must be at least equal to the number of academic staff members in the research team. Since 2013, according to the internal rules of the FTZ, no personnel costs (other than scholarships) can be claimed from IGA funds.

The funds allocated to the IGA FTZ have been continuously increasing as shown in the figure 3.6.

In 2023, 15 one-year projects were supported for a total amount of CZK 3,260,000. These projects involved 228 Master's and doctoral students; see the *table 3.4*.

GRAPH 3.7 TOTAL DISTRIBUTED BUDGET OF INTERNAL GRANT AGENCY OF FTZ FROM 2014 – 2023 (IN CZK)



TAB 3.4

NAME OF THE PROJECT	PRINCIPAL INVESTIGATOR	NUMBER OF STUDENTS	BUDGET (CZK)
Food security and innovative food processing methods	Jan Banout	25	254 000 CZK
Sustainability and profitability of agri-food systems	Miroslava Bavorová	37	391 000 CZK
Captive breeding of endangered tropical ungulates	Francisco Ceacero	19	278 000 CZK
Genetic monitoring of animal health and population biology	Barbora Černá Bolfíková	16	192 000 CZK
Genetic improvement of medicinal plants through biotechnological interventions	Eloy Fernández Cusimamani	8	178 000 CZK
Spatiotemporal behaviour of large mammal populations in tropical ecosystems	Pavla Hejčmanová	13	250 000 CZK
From farmers to consumers: sustainable production through collective actions	Petra Chaloupková	18	123 000 CZK
Appropriate technologies in waste and water management	Tatiana Ivanova	17	156 000 CZK
Biological activity and chemistry of medicinal and edible plants from tropical and subtropical regions	Ladislav Kokoška	13	308 000 CZK
Biodiversity in tropical agroecosystems	Bohdan Lojka	14	278 000 CZK
Challenges for Agenda 2030 – No One is Left Behind in Rural Areas of Developing Countries	Jana Mazancová	27	449 000 CZK
Sustainable alternatives for animal production	Tersia Needham	4	110 000 CZK
Biology of Stylotermitidae	Jan Šobotník	2	83 000 CZK
The nexus between traditional ecological knowledge and plant genetic resources conservation: the ethnobotany of under-domesticated plant species and crop wild relatives	Zbyněk Polesný	11	109 000 CZK
Biotechnological, molecular and proteomic methods: tools for crop improvement	Iva Viehmannová	4	101 000 CZK
		228	3 260 000 CZK

EXTERNAL GRANTS AND PROJECTS

In 2023, FTZ staff and students participated in 3 EU-funded grants; 6 national research grants funded by the Technology Agency of the Czech Republic, the Czech Science Foundation, the Ministry of Environment of the Czech Republic, and the Operational Programme for the Environment; and eight foreign development cooperation projects.

Participation in the DIGITAF (DIGItal Tools to help AgroForestry meet climate, biodiversity and farming sustainability goals: linking field and cloud) project funded by Horizon Europe can be considered a particularly great success.

The table summarises all these projects, including the programme from which the projects were funded, the principal investigator, and the total project budget.



TAB 3.5 SUMMARY OF THE PROJECTS

Project name	Duration	Provided by / Provider	Programme	Operator	Project Budget	Contact Person / Principal Investigator
Analysis of genetic samples of large carnivores for the project "Coexistence with large carnivores", implemented under the Operational Programme Environment	2021 – 2023	MZP	OPE	CZU	1 610 000 CZK	Barbora Černá Bolfíková
Phosphogypsum Processing to EU Critical Raw Materials	2022 – 2025	TACR	ERA-MIN	École Nationale Supérieure de Formation de l'Enseignement Agricole	1 000 000 EUR	Hynek Roubík
Development of a sealing cap for microtiter plates for testing volatiles	2021 – 2023	TACR	GAMA2	CZU	1 474 508 CZK	Ladislav Kokoška

ANALYSIS OF GENETIC SAMPLES OF LARGE CARNIVORES FOR THE PROJECT "COEXISTENCE WITH LARGE CARNIVORES", IMPLEMENTED UNDER THE OPERATIONAL PROGRAMME ENVIRONMENT

- **Principal investigator:** Barbora Černá Bolfíková
- **Total budget:** 1 610 000 CZK
- **Project duration:** 2021 – 2023
- **Provider:** Ministry of the Environment of the Czech Republic

The aim of the genetic processing of samples from large carnivores in the Czech Republic, namely wolf, lynx and bear, was to verify the species status of the samples and to evaluate the population parameters and genealogical structure of the target carnivores. This included assigning wolves to source populations (Carpathian or lowland), identifying recaptures or first identifications of individuals, and determining pack membership and relationships within the pack (e.g., relationships between offspring and parents or siblings). For bears, we checked their species status and whether they were recorded in our database. For lynx, we conducted similar analyses as for wolves, specifically identifying individuals, identifying repeat captures, and determining family relationships.

Wolves were analysed directly at the Laboratory of Molecular Genetics of the FTZ, bears were processed as a subtask at the Faculty of Science of Charles University, and lynx analysis was conducted in Brno at the Institute of Vertebrate Biology, also as a subtask.

PHOSPHOGYPSUM PROCESSING TO EU CRITICAL RAW MATERIALS

- **Principal investigator:** Hynek Roubík
- **Total budget:** 1 000 000 EUR
- **Project duration:** 2022 – 2025
- **Provider:** The Technology Agency of the Czech Republic, ERA-MIN programme

More than three-quarters of phosphate fertilizers produced globally are produced using phosphoric acid as an intermediate product, leaving 4–6 t low-radioactive phosphogypsum (PG) per t P₂O₅ produced, as relevant by-product/waste. About 85% of the 5.6–7.0 billion t PG produced globally by the phosphate industry are disposed of in stacks in 52 countries worldwide. The largest stacks in the EU are found in Lithuania, Poland, Spain, Greece, Bulgaria, Serbia and Kosovo, the Netherlands, Belgium, Portugal and Finland. 3-4 billion are accessible for recovery worldwide and approximately 2 billion t are accessible for

recovery in Europe. At the current rate of production, these stacks of low-radioactive material are growing by some 200 million t per year. From a regional environmental point of view, PG may be the single most critical processing issue of fertilizer production today. The objective of this project is to further develop an innovative process for REE recovery from PG that has recently been patented by the coordinator from TRL 4-5 (lab-scale experiments), which is the current state, to TRL 7-8 (pilot plant operation). The focus will be on the comprehensive use of PG and, besides the opportunity to recover REEs from it, the remaining gypsum matrix will be used as an inexpensive material in construction/sound insulation.

DEVELOPMENT OF A SEALING CAP FOR MICROTITER PLATES FOR TESTING VOLATILES

- **Principal investigator:** Ladislav Kokoška
- **Total budget:** 1 474 508 CZK
- **Project duration:** 2021 – 2023
- **Provider:** The Technology Agency of the Czech Republic, GAMA2 programme

Natural volatile substances with antimicrobial activity have a high potential for application in medical, food, and agricultural practice as antibiotic drugs, preservatives, and fungicides. However, a limiting factor for the development of such products has been the lack of suitable (rapid and accurate) methods for testing their efficacy. A major milestone in this field is the new broth microdilution volatilisation method developed by the proponent's team in 2017. However, the conventional microtiter plate cap, which the new method uses to test the antimicrobial activity of volatiles in the gas phase, has a number of drawbacks. So, development of a sealing cap for plates for testing volatiles is needed.

TAB 3.6 OVERVIEW OF FOREIGN PROJECTS

Project name	Duration	Provided by / Provider	Programme	Operator	Project Budget	Contact Person / Principal Investigator
GLOFOR – EMJM in Global Forestry	2022-2028	European Commission	Erasmus+	University of Copenhagen	4 864 800 EUR	Bohdan Lojka/Petra Chaloupková
Structural Capacities for Tackling Wicked Problems (SCORE)	2022-2025	European Commission	Erasmus – Cooperation partnerships	3R-BioPhosphate Ltd.	121 705 EUR	Hynek Roubík
DIGITAF – DIGItal Tools to help AgroForestry meet climate, biodiversity and farming sustainability goals: linking field and cloud	2022-2026	European Commission	Horizon Europe	National Institute of Agricultural Research (INRA)	3 667 138 EUR	Bohdan Lojka
UNICOM – Universities-Communities: strengthening cooperation	2023-2027	European Commission	Erasmus+	Universita di Genova	988 435 EUR	Hynek Roubík
AGRIGEP – Assessment and implementation of Agriculture and Life Science Universities' first Gender Equality Plans in widening countries	2023-2025	European Commission	Horizon Europe-Widera	Hungarian University of Agriculture and Life Sciences	998 237 EUR	Jana Mazancová
OSIRIS – Open Science to Increase Reproducibility in Science	2023-2026	European Commission	Horizon Europe-Widera	Ghent University	1 688 433 EUR	Hynek Roubík

A more detailed description of some of these projects is contained in the chapter International Relations.

FOREIGN DEVELOPMENT COOPERATION PROJECTS

In 2023, 8 development projects in four countries were implemented under the guidance or cooperation of FTZ experts. The implementation of development projects has aspects of international and research activities (applied research) and provides practical knowledge for students and teachers. The projects are financed from various sources, but mostly by the Czech Development Agency and Ministry of Foreign Affairs.

All development projects implemented under the leadership of the FTZ are presented on the Faculty's website in both Czech and English. For more information see: <https://www.ftz.czu.cz/en/r-9423-projects-and-partnerships>.

The following development projects were implemented in 2023:

ARBA MINCH FRUIT VALUE CHAIN

- **Principal investigator:** MENDELU in Brno
- **on behalf of:** Vladimír Verner, Anna Maňourová, Jan Staš, Iva Kučerová and Tomáš Kudera
- **Total budget:** 4 000 000 CZK (in 2023)
- **of which to CZU:** 650 000 CZK (in 2023)
- **Implementation period:** 2020 – 2023
- **Provider:** The Czech Development Agency

Even though fruit crops are staple ingredients in Ethiopian households, the average annual fruit consumption in Ethiopia represents only 7 kg per capita (the recommended consumption is about 21 times

higher). Arba Minch Zuria is an important fruit-growing district, which accounts for 10-15% of total fruit production in Ethiopia. However, the potential of the area is much higher. Therefore, this project aims to introduce a fruit value chain to improve nutrition as well as the health of local people and to increase the market competitiveness of farmers. Specifically, the project focuses on the diversification of cultivated fruit crops, efficient storage, post-harvest processing, and subsequent market access. The project was implemented in four target kebeles under the local administration of the Arba Minch Zuriaworeda, namely Kolla Shara, Chano Dorga, Chano Cheleba and Chano Mile. Project activities and outputs should reach at least 2,000 households and 400 young people.

REHABILITATION OF CHELELEKA WETLANDS AND FORESTS IN THE WONDO GENET AREA

- **Principal investigator:** Zbyněk Polesný
- **Total budget:** 128 900 CZK
- **Implementation period:** 2023 – 2025
- **Provider:** The Czech Development Agency

The Cheleleka wetland is an important source of livelihood for the surrounding inhabitants, stabilises the local microclimate, serves as an extensive natural sewage treatment plant and is home to a significant number of organisms. At the same time, however, it is facing high levels of degradation and its area has been steadily decreasing over the long term. The wetland lies on a largely sloping area, rich in biodiversity, water resources and forests, and has overall high production and recreational potential, which is limited by unsustainable logging and the overuse of water for irrigation. Deterioration of soil quality (and fertility) reduces food security, access to drinking water and fuels conflict over resources and the migration of young people from the area. The project primarily aims to prevent the continued degradation of the Cheleleka wetland and restore its functionality and ability to produce environmental

services. The project will focus on promoting sustainable natural resource management planning, implementing technical and biological countermeasures and soil conservation. Setting up waste management and water efficiency, introducing agroforestry into people's management and involving local communities and officials in problem solving are also important components.

INTEGRATED FARMING III. DEVELOPING AN INTEGRATED APPROACH TO FARMING IN THE WESTERN PROVINCE OF ZAMBIA

- **Principal Investigator:** MENDELU
- **on behalf of:** Vladimír Verner, Jan Staš, Radim Kotrba and Miloslav Petřtýl
- **Total budget:** 8 000 000 CZK (in 2023),
- **of which to CZU:** 490 000 CZK (in 2023)
- **Project duration:** 2022 – 2024
- **Provider:** The Czech Development Agency

The project focuses on improving agricultural production in the Western Province of Zambia. Special emphasis is placed on a holistic approach to farming (integrated farming). The main implementer is Mendel University in Brno, while the Faculty of Tropical Agriculture and the Faculty of Agrobiological, Food and Natural Resources are the core partners in the project. The scope of work of the CZU within the project is to train farmers in aquaculture development, honey production and (agro-)forest products utilisation.

BIO-GAS TECHNOLOGY TO INCREASE COMMUNITY RESILIENCE IN THE WESTERN PROVINCE OF ZAMBIA

- **Principal Investigator:** People in Need
- **on behalf of CZU:** Jana Mazancová
- **Total budget:** 24 500 000 CZK
- **of which to CZU:** 3 315 000 CZK
- **Implementation period:** 2021 – 2024
- **Provider:** The Czech Development Agency

The proposed project will address the challenges described above by leveraging the potential of biogas technology for improved access to clean and sustainable energy and organic fertilizer. This will be achieved by employing a holistic approach to the development of the biogas market and by integrating the following key components into the project design: a) increasing the demand for the technology, b) strengthening the supply side (including the provision of products and services related to biogas technology), c) improving access to finance and the financial literacy of target farmers, d) enhancing the knowledge and awareness of how to use outputs of biogas technology for improved agricultural productivity, income, and household nutrition intake.

DEVELOPMENT OF STUDY PROGRAMMES AND RESEARCH IN SUSTAINABLE AGRICULTURE AND AQUACULTURE IN CAMBODIA

- **Principal Investigator:** Petra Chaloupková, Tereza Brůna Slámová, Olga Leuner, Lukáš Kalous, Miloslav Petřtýl, Jan Banout
- **Total Budget:** 1 105 000 CZK
- **Implementation period:** 2023
- **Provider:** Ministry of Foreign Affairs of the Czech Republic

The main contribution of the project is the development of study programmes in the field of sustainable agriculture and aquaculture production with a focus on increasing the capacities of academic staff and students and thereby contributing to the improvement of higher

education in Cambodia. The purpose of the project is to strengthen the capacities of academic staff and students in the field of value chains in a sustainable way (sustainable value chains), with a focus on alternative aquaculture products through practical training and professional cooperation. The priority outputs were 1) Transfer of Czech know-how in the field of creating RUA study programmes and university management; 2) Increasing the research competencies of students and researchers and 3) Organization and promotion of scientific and research activities.

PUBLICATION AND RESEARCH DEVELOPMENT FOR EDUCATION IN LIFE SCIENCES AT HAWASSA UNIVERSITY, ETHIOPIA

- **Principal investigator:** Marie Kalousová
- **Total budget:** 1 154 600 CZK
- **Implementation period:** 2023
- **Provider:** Ministry of Foreign Affairs of the Czech Republic

The project aims to strengthen publishing and research activities at two agriculturally oriented faculties of the University of Hawaii (HU) in areas linking ecosystem diversity to agricultural sustainability (agroforestry and pedology, plant molecular genetics, wildlife ecology, in vitro plant technologies). As part of the activities, academic staff from the CFA will provide seminars and courses for HU students and staff, including field exercises for data and sample collection, and continue to participate in supervising student research projects, theses and scientific publications. In addition, a follow-up workshop on scientific writing and statistical data processing will be organized for participants. All materials used and generated in the teaching of the courses will be provided to the instructors of the relevant HU courses for inclusion in the existing syllabus. Among the planned activities is also a short stay of selected HU staff and students at the CZU for practical training in our laboratories. This project is a direct continuation of the project implemented in 2022.

SUPPORT FOR EDUCATION AND SCIENTIFIC RESEARCH ACTIVITIES IN THE FIELD OF ETHNOBOTANY AND THE USE OF BY-PRODUCTS OF FOOD PROCESSING, BOSNIA AND HERZEGOVINA

- **Principal investigator:** Jan Banout, Iva Kučerová
- **Total budget:** 939 000 CZK
- **Implementation period:** 2023
- **Provider:** Ministry of Foreign Affairs of the Czech Republic

The aim of the project was to improve the level of scientific research skills and the quality of teaching at the Faculty of Agriculture and Food Technology at the University of Mostar and the Agro-Mediterranean Faculty of the University Džemal Bijedič in Mostar in the field of ethnobotany and the use of by-products of food processing through implemented activities and realised outputs that focused primarily on the implementation of specialised educational courses. In addition to the above, the project also focused on popularising science and bringing the academic environment closer to the wider public in the target area.

EMPOWERING THE FUTURE OF AGRISCIENCES IN UKRAINE: AGRISCI-UA

- **Principal investigator:** Hynek Roubík
- **Total budget:** 1 440 000 CZK
- **Implementation period:** 2023
- **Provider:** Ministry of Foreign Affairs of the Czech Republic

This project aims to further strengthen the capacities and collaborations of young educators, researchers and Master and PhD students at selected Ukrainian universities through the further development of an inter-university platform - AgriSciences Platform for capacity building in selected areas of agrarian sciences that will remain key to the post-war development of Ukraine

LONG-TERM PROJECTS

ANTELOPE CONSERVATION – GIANT ELAND CONSERVATION IN WEST AFRICAN SAVANNAH

- **Principal investigator:** Karolína Brandlová
- **Project duration:** since 2010
- **Provider:** international grants and private donations

The Antelope Conservation NGO associates scientists, students and enthusiasts who want to participate in biodiversity conservation and to change the fate of the Western Giant eland and other antelope species in the West and Central African savanna. The NGO is based at the Faculty of Tropical AgriSciences, the Czech University of Life Sciences Prague.



The team members have more than 20 years of experience in the antelope conservation in the West African savannah. The team provides scientific evidence for conservation management decisions, builds capacities for antelope conservation and provides support for field operations. Antelope Conservation also developed and implemented environmental education and awareness programmes for everyone from school kids to the general public in many countries both in Africa and Europe and provides carefully designed educational and awareness materials for all types of public use with special focus on Western Africa (mostly in French).

Postdoc positions

In 2023, there was one postdoc position taken by **Dr.Ullah** at the Department of Economics and Development.

Dr. Ullah is engaged in scientific activities focusing on "The impact of the adoption of sustainable agricultural practices on households' food security and environmental health: key lessons from Pakistan". He is also involved in teaching Master's students (course: Market information and services, the economics of agriculture and natural resources in the tropics).

Conferences

In 2023, specific university research funds were mainly used to finance the FTZ Internal Grant Agency (3,260,000 CZK), whereas the rest was used to support conferences organised by the Faculty:

AGRINATURA ASSOCIATION GENERAL ASSEMBLY 2023

The Faculty of Tropical AgriSciences hosted the Agrinatura General Assembly 2023 and scientific conference held from 10th May to 12th May. The General Assembly and international conference have proved to be a platform for knowledge exchange, networking, and collaboration in agriculture for development. The Agrinatura General Assembly and conference brought together experts and professionals from different parts of the world to share ideas, experiences, and insights in various aspects of agriculture.

Almost 90 participants from 30 international institutions took part in these events and were actively engaged in the presentations, discussions, and networking sessions. Their presence made a significant impact on the quality of the event and helped create a platform for exchange and collaboration among attendees.

We would like to express our gratitude to the esteemed speakers and presenters who shared their invaluable expertise and experiences during the conference.

The key topics discussed during the conference were:

- **Challenges and opportunities for youth involvement in Food Systems Evolution**
- **Social innovations for Food Systems Transition**
- **Implementation of technical innovations in Agroecological practices**

CZECH EVALUATION CONFERENCE: EVALUATION DYNAMICS FROM THE PERSPECTIVE OF DIFFERENT PLAYERS

The Role and Engagement of Local Governments; International Development; and Evaluation in Relation to Minorities and Refugees. These were some of the topics of the Czech Evaluation Society and the Faculty of Tropical AgriSciences Conference with the subtitle Evaluation Dynamics from the Perspective of Different Players, which was held from June 14 to June 15 at the Czech University of Life Sciences Prague. Other discussed topics were, for example, the use of artificial intelligence, evaluation praxis of Czech development assistance and the future development of evaluation. Among significant participants at the conference were Šimon Pánek (People in Need), Daniel Prokop (PAQ Research), Josef Šlerka (Charles University), Petra Chaloupková (the Faculty of Tropical AgriSciences) and others. Thanks to the wide range of topics and the participation of remarkable guests, the event became a unique opportunity to share experiences and network among different players in the area of evaluation. Participants could together look for ways to strengthen evaluations and to use them more effectively. The event was held under the auspices of the Minister of Regional Development Ivan Bartoš and the Minister of Foreign Affairs Jan Lipavský.

4TH INTERNATIONAL MULTIDISCIPLINARY CONFERENCE FOR YOUNG RESEARCHERS (MCRY)

The core aim of this conference held from 5th to 6th October 2023 was to provide opportunities for early career researchers from a range of disciplines to share their research through the conference podium, as well as to receive informal in-depth feedback through discussions and to enable them to establish contact with professionals and other institutions. There were over 120 participants from various countries.

Website: <https://mcyr.ftz.czu.cz/en>

Awards

THE RECTOR'S AWARD FOR THE BEST PUBLICATION OUTPUT OF CZU EMPLOYEES, LISTED IN THE NATURE JOURNAL INDEX

Barbora Černá Bolfiková

- Emergence of methicillin resistance predates the clinical use of antibiotics – NATURE

Jan Šobotník, Thomas Bourguignon

- Termite dispersal is influenced by their diet – PROCEEDINGS OF THE ROYAL SOCIETY B – BIOLOGICAL SCIENCES

THE RECTOR'S AWARD FOR THE BEST PUBLICATION OUTPUTS OF DOCTORAL STUDENTS' RESEARCH WORK

and

JOSEF HLÁVKA AWARD FOR THE BEST STUDENTS AND GRADUATES

Rohit Bharati

- Rohit Bharati, M.Sc. from the Tropical Biotechnology Research Group from the Department of Crop Science and Agroforestry of our faculty, was awarded the prestigious Josef Hlávka Award. The award is given to candidates who have demonstrated exceptional ability and

creative thinking in their field of study. Rohit's research primarily focuses on the Amelioration of medicinal, ornamental, and aromatic plants through biotechnological interventions. This recognition is a testament to Rohit's exemplary abilities and innovative thinking within the field of Tropical Biotechnology, specifically focusing on the amelioration of medicinal, ornamental, and aromatic plants through biotechnological interventions. His dedication and contributions to the Department of Crop Science and Agroforestry are truly commendable. This achievement reflects not only Rohit's excellence but also enhances the reputation of our academic community.

PROFESSOR MIROSLAV VLČEK'S EXTRAORDINARY SCHOLARSHIP

Girish Kandal Prasad

- The Extraordinary Scholarship of Professor Miroslav Vlček from the Study in Prague is prestigious award, named in honour of the former Vice-Rector for International Relations at Czech Technical University (CTU) in Prague, recognises exceptional international students from seven universities (AMU, CTU, CZU, UK, UCT, VŠE and VŠUP).

PROFESSOR STOKLASA PRIZE

Veit Ny

- Dr. Veit Ny received the Professor Stoklasa Award, the most prestigious award in the country for doctoral theses.

THE RECTOR'S AWARD FOR THE BEST PUBLICATION OUTPUT OF CZU EMPLOYEES IN JOURNALS RANKED IN THE 1ST DECILE IN WOS

Veit Ny

- Potential benefits of amino acid supplementation for cervid performance and nutritional ecology, with special focus on lysine and methionine: A review – ANIMAL NUTRITION

Tersia Needham

- Potential benefits of amino acid supplementation for cervid performance and nutritional ecology, with special focus on lysine and methionine: A review – ANIMAL NUTRITION
- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES

Francisco Ceacero Herrador

- Potential benefits of amino acid supplementation for cervid performance and nutritional ecology, with special focus on lysine and methionine: A review – ANIMAL NUTRITION
- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES

Nikola Teutscherova

- Gross N transformation rates in soil system with contrasting Urochloa genotypes do not confirm the relevance of BNI as previously assessed in vitro – BIOLOGY AND FERTILITY OF SOILS
- Nitrogen acquisition by two U. humidicola genotypes differing in biological nitrification inhibition (BNI) capacity and associated microorganisms – BIOLOGY AND FERTILITY OF SOILS

Johana Alaverdyan (Hrnkova)

- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES

Abubakar Sadiq Musa

- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES

Jignesh Italiya

- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES

Radim Kotrba

- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES

Jiří Černý

- Borrelia spirochetes in European exotic farm animals – FRONTIERS IN VETERINARY SCIENCES
- Coxiella burnetii in ticks, livestock, pets and wildlife: A mini-review – FRONTIERS IN VETERINARY SCIENCES
- Guanine quadruplexes in the RNA genome of the tick-borne encephalitis virus: their role as a new antiviral target and in virus biology – NUCLEIC ACIDS RESEARCH

Seyma Celina

- Coxiella burnetii in ticks, livestock, pets and wildlife: A mini-review – FRONTIERS IN VETERINARY SCIENCES

Jan Šobotník

- The impact of termites on soil sheeting properties is better explained by environmental factors than by their feeding and building strategies – GEODERMA
- The functional evolution of termite gut microbiota - MICROBIOME
- Molecular Phylogeny Reveals the Past Transoceanic Voyages of Drywood Termites (Isoptera, Kalotermitidae) – MOLECULAR BIOLOGY AND EVOLUTION

David Sillam-Dusses

- The functional evolution of termite gut microbiota – MICROBIOME

- Molecular Phylogeny Reveals the Past Transoceanic Voyages of Drywood Termites (Isoptera, Kalotermitidae) – MOLECULAR BIOLOGY AND EVOLUTION

Thomas Bourguignon

- The functional evolution of termite gut microbiota - MICROBIOME
- Molecular Phylogeny Reveals the Past Transoceanic Voyages of Drywood Termites (Isoptera, Kalotermitidae) – MOLECULAR BIOLOGY AND EVOLUTION

Yelizaveta Chernysh

- Closing the upcoming EU gypsum gap with phosphogypsum – RESOURCES CONSERVATION AND RECYCLING

Viktoriiia Chubur

- Closing the upcoming EU gypsum gap with phosphogypsum – RESOURCES CONSERVATION AND RECYCLING

Hynek Roubík

- Closing the upcoming EU gypsum gap with phosphogypsum – RESOURCES CONSERVATION AND RECYCLING

THE RECTOR'S AWARD FOR TEACHING ACTIVITY

The Rector's Award for Teaching Activities in 2022 was awarded to doc. Tersia Needham, Ph.D. from the Department of Animal Science and Food Processing.

THE FTZ DEAN'S AWARD FOR THE BEST SCIENTIFIC PUBLICATION OR POPULARISATION OUTPUT**Miroslava Bavorová**

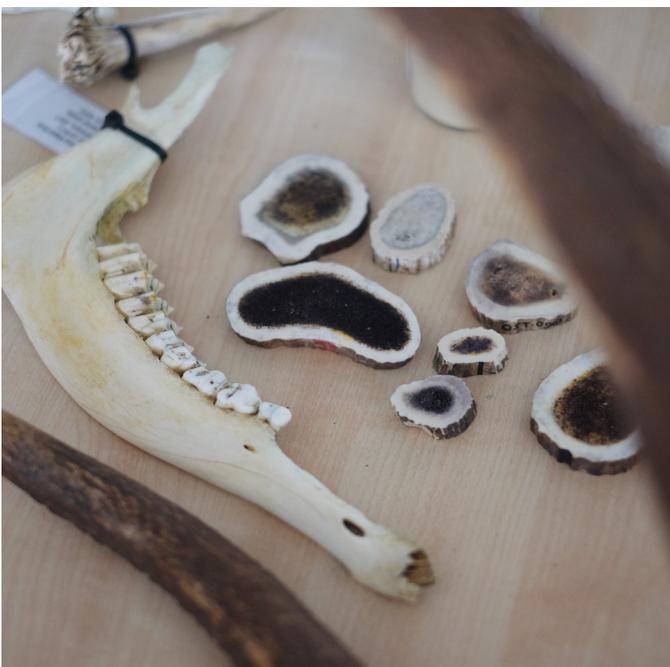
- The prize was awarded to BESTA research team (team leader Miroslava Bavorova) for a series of scientific papers and research scripts. The BESTA research team has a longstanding interest in the behaviour of actors in the agri-food chain, specifically in the adoption of innovations and farmers' adaptation to climate change and food security. The team conducts empirical studies primarily using qualitative and quantitative questionnaire surveys. Over 20 articles have been published between 2021-2023 in journals registered in the Web of Science database. The script 'Survey Design' has been published in English, Ukrainian, and Bosnian to introduce students to survey research design and implementation.



FTZ research groups

There are 14 research teams at the FTZ, which consist of academic staff, research staff, technical staff, doctoral students and FTZ students:

- THE ANIMAL PHYSIOLOGY AND BEHAVIOUR RESEARCH GROUP
- BEHAVIOURAL STUDIES IN AGRI-FOOD SECTOR
- THE BIOGAS RESEARCH TEAM
- CONSUMERS' BEHAVIOUR & CAPACITY BUILDING (COBE)
- THE COOPERATIVE RESEARCH GROUP
- THE E4 (ECOLOGY, EVOLUTION, EMERGENCE & EPIDEMIOLOGY OF ZOOSES) RESEARCH GROUP
- THE FOOD SECURITY RESEARCH GROUP
- MEGERA: MOLECULAR ECOLOGY, GENETICS AND EVOLUTIONARY RESEARCH OF ANIMALS
- THE TERMITE RESEARCH TEAM (TRT)
- TRIBE | THE TROPICAL BOTANY AND ETHNOBIOLOGY LAB
- THE TROPICAL BIODIVERSITY RESEARCH GROUP
- THE TROPICAL BIOTECHNOLOGY RESEARCH GROUP
- TRACE | TROPICAL FARMING SYSTEMS & ECOLOGICAL ECONOMICS
- THE WILDLIFE ECOLOGY LAB





International relations

The importance of international activities for the FTZ

International activities and cooperation with foreign partners are among the priority activities of the Faculty of Tropical AgriSciences (FTZ).

The FTZ's international activities in 2023 focused mainly on:

- bilateral cooperation with institutions, especially in less developed countries,
- active participation in the international association AGRINATURA,
- implementation of development projects, and
- the submission of new international projects.

Approximately 55% of FTZ students (of the total number) come from 76 countries around the world (e.g. Nigeria, Ghana, India, Russia, Cameroon, Zimbabwe, Pakistan, Ethiopia, Slovakia, Ukraine, Bangladesh, Kazakhstan, Syria, Turkey, etc.).

Most of the modules are taught in English thanks to the Bachelor's programme International Cooperation in Agriculture and Rural Development, and the Master's programmes: International Development and Agricultural Economics, Agri-food Systems and Rural Development, Tropical Crop Management and Ecology, Tropical Forestry and Agroforestry, Wildlife and Livestock Production, Management and Conservation, Tropical Farming Systems, Agricultural Sciences and Farming Systems in the Tropics and Subtropics (double degree) and Global Forestry (multiple degree). Ph.D.-level programmes are also taught in English: Tropical Agrobiological and Bioresource Management, Sustainable Rural Development, Agriculture in the Tropics and Subtropics.

In 2023, the new Multiple degree study programme Global Forestry was accredited in cooperation with the Paris Institute of Technology for

Life, Food and Environmental Sciences (AgroParisTech), Montpellier and Kourou campuses (France), the Technische Universität, Dresden, the Institute of International Forestry and Forest Products (Germany), the University of Copenhagen, the Department of Food and Resource Economics (Denmark) and the University of Padua, the Department of Land, Environment, Agriculture and Forestry (Italy).

FTZ students are motivated to study English and other world and regional languages as part of their preparation for future professions and are also motivated thanks to the opportunity to participate in studies or training abroad within the Erasmus+ programme. The FTZ participates in the organisation of seminars, training, summer schools, and research projects in cooperation with major world institutions. International development projects are also implemented.

New forms of higher education implemented in cooperation with foreign partner institutions

In 2023, a project called "Circular Case Studies: Food Systems Transformation through Transdisciplinarity and Cooperation (2CS)" was implemented, financed by the ELLS Incentive Fund (Euroleague for Life Sciences). This project is coordinated by the FTZ/CZU, together with partners from BOKU (Austria) and the Swedish University of Life Sciences (Sweden).

The overall objective of the project was to enhance innovative teaching methods, international cooperation, and a transdisciplinary approach at the selected ELLS universities to improve the soft skills, science communication, critical thinking, teamwork and problem-solving skills of the students. Its specific objectives were the following:

1. to give an incentive for innovative teaching method implementation
2. to stimulate multilateral joint activity within ELLS university partners
3. to further develop and support the activities and student involvement within transdisciplinary innovative teaching methods
4. to stimulate a transferable methodical approach

This project focused on a transdisciplinary approach to problem-solving via the project-based learning (PBL) teaching method. Its objective was to deepen the Master's degree students' knowledge and experience in the subject by using a transdisciplinary approach and innovative teaching methods based on real-time case studies from selected regions worldwide (Cambodia, Bosnia and Herzegovina, Ethiopia and Peru). All the student groups involved in the winning case study were invited to collectively present their outcomes in the form of a joint poster during the ELLS conference 2023 in Hohenheim (at a special workshop session).

The Erasmus+ programme

ERASMUS+ IN 2023 AT FTA IN NUMBERS

Number of agreements (= institutions) (KA103/KA107, 171) 24/33

Mobility of students (KA103/KA107):

- Outgoing students FTA - study stays (SMS) - 12/1.
Number of months 40/4*
- Outgoing students FTA - traineeship (SMP) - 8/13.
Number of months 19/28*
- Outgoing students FTA - KA131 BIP 3 students for 15 days in total.
- Erasmus+ KA131 - Short-term mobility of PhD students - 8 students for 160 days.
- Graduate internships 2 students for a total of 151 days.
- Incoming students - study stays - 24/4.
Number of months 103/12*
- Incoming students - traineeship - 3/46. Number of months 6/91*

Mobility of teaching and other staff (KA103/KA107):

- Outgoing FTA staff 23/27. Number of days 150/208*

The most frequent destinations of FTA staff were countries: Bosnia and Herzegovina, Germany, Ethiopia, Cambodia, Zambia and others.

- Incoming staff 10/65. Number of days 86/608*

* These are months and days of 2023 from the academic years 2022/23 and 2023/24

The Erasmus+ programme is traditionally one of the main activities within the international activities of the FTZ. By 2023, the FTZ had concluded bilateral agreements with the following 24 institutions within the respective programme countries (i.e. KA103):

- 1) The University of Wageningen, Netherlands
- 2) La Universidad Politécnica de Valencia, Spain
- 3) La Universidad Politécnica de Madrid, Spain
- 4) La Universidad de Castilla-La Mancha, Spain
- 5) The University of Kassel, Germany
- 6) The University of Hohenheim, Germany
- 7) Montpellier SupAgro, France
- 8) O Instituto Politécnico de Castelo Branco, Portugal
- 9) Szent István University, Hungary
- 10) Ghent University, Belgium
- 11) The Catholic University of Leuven, Belgium
- 12) L'Université Catholique de Louvain, Belgium
- 13) La Università degli Studi di Firenze, Italy
- 14) La Università degli Studi di Catania, Italy
- 15) Ondokuz Mayıs University, Turkey
- 16) Akdeniz University, Turkey
- 17) La Università degli Studi della Basilicata, Italy
- 18) The Agricultural University Plovdiv, Bulgaria
- 19) Die Rheinische Friedrich-Wilhelms-Universität, Bonn, Germany
- 20) L'Haute École Charlemagne, Belgium
- 21) Josip Juraj Strossmayer University of Osijek, Croatia
- 22) The University of Angers, France
- 23) La Universidad de la Laguna, Spain
- 24) La Universidad de Cádiz, Spain.

In the framework of the Erasmus+ programme, the "International Credit Mobility" project, i.e. cooperation with so-called "partner countries" (KA171), the FTZ has concluded bilateral agreements with the following institutions in 2023:

- 1) L'Université 8 Mai 1945 Guelma, Algeria
- 2) The Royal University of Bhutan, Bhutan
- 3) L'Université De Dschang, Cameroon
- 4) The Fiji National University, Fiji
- 5) Savannakhet University, Laos
- 6) L'Université Dan Dicko Dankoulodo Maradi, Niger
- 7) La Faculté d'Agronomie Université Abdou Moumouni, Niger
- 8) Visayas State University, Philippines
- 9) L' Université de Thiès, Senegal
- 10) A Universidade Nacional Timor Lorosa'e, East Timor
- 11) Truong Dai Hoc Nong Lam - Dai Hoc Hue, Vietnam
- 12) The University of Lampung, Indonesia
- 13) Pandit Ravishankar Shukla University, India
- 14) The University of Central Asia, Kyrgyzstan
- 15) The Royal University of Agriculture, Cambodia
- 16) The University of Pretoria, South Africa
- 17) Tshwane University of Technology, South Africa
- 18) Prince of Songkla University, Thailand
- 19) The National University of Life and Environmental Sciences of Ukraine, Ukraine
- 20) Dnipro State Agrarian and Economic University, Ukraine
- 21) Sumy National Agrarian University, Ukraine
- 22) Sumy State University, Ukraine
- 23) The University of Mostar, Bosnia-Herzegovina
- 24) Džemal Bijedić University of Mostar, Bosnia and Herzegovina

Erasmus+ projects

CAPACITY BUILDING IN HIGHER EDUCATION

In 2023, two projects were submitted to the Erasmus+ Capacity building call, in which the FTZ was a partner through the faculty's IRO. The ADVALUE project, focusing on the cooperation of European universities with partners in Kenya and Uganda in the field of value chain management, was accepted and will be implemented in the period 2024-2026. The second project was WB4FOOD, aimed at food tourism with partners from Albania, Bosnia and Herzegovina, Serbia and Spain, was not accepted. New project proposals were prepared and submitted in February and March 2024.

In 2023 was furthermore running project called UNICOM - Universities – Communities: strengthening cooperation. The aim of this project is To enhance universities' social role through boosting university-community engagement leading to the elaboration of state policy on supporting the third mission of universities for ensuring social cohesion, resilience, sustainability and prosperity in Ukraine. UNICOM is a project with a total funding of 988,431 Euro and will run for 4 years.

INTERNATIONAL CREDIT MOBILITY

In 2023, the FTZ coordinated projects within the Erasmus+ programme, the so-called "International Credit Mobility" projects. There were in total 24 concurrently running projects from the 2022 (implementation period 2022-2025) and 2023 (implementation period 2023-2026) calls. These projects were carried out in the following countries: Albania, Algeria, Bhutan, Bosnia and Herzegovina, Cambodia, Cameroon, East Timor, Fiji, India, Indonesia, Kyrgyzstan, Morocco, Niger, Samoa, Senegal, Somaliland, South Africa, Thailand, Ukraine, Uzbekistan and Vietnam. The list of partner universities and the number of mobilities are described on the previous pages. As part of the new call 2024 for project submissions, the FTZ submitted 41 applications. Out of the total number of assigned mobilities (212 in call 2022) in the past year, 17 employees came from five states. Two students started the winter semester and a total of six employees conducted teaching and training mobility in institutions across Albania, Kazakhstan, Kyrgyzstan, Fiji, Moldova and others.

At the Faculty of Tropical Agriculture, the main exchange was done in the field of aromatic plants, ethnobotany and human nutrition. Thanks to the European Commission's ERASMUS+ KA171 international credit mobility programme, in which the Czech University of Life Sciences in Prague (CZU) was ranked among the first three most successful applicants nationwide. CZU employees and students engaged in cross-disciplinary knowledge sharing and experiences. It should be noted that the CZU received a total of 212 and 192 mobilities in 2022 and 2023, respectively as part of the given project, with more than half of them allocated to the FTZ.

The ERASMUS+ KA171 project is a three-year initiative submitted annually. Its core objectives include enhancing higher education capacities, disseminating best practices, and fostering international collaboration outside EU partner states. The CZU's international credit mobility demonstrates a commitment to inclusivity, supporting disadvantaged student groups and aligning with Sustainable Development Goal 4 – Quality Education. The ERASMUS+ project serves as a tool for internationalisation, providing diverse opportunities for professional and academic growth among employees and students. In

the context of global education, the FTZ and CZU reflect a commitment to collaboration and knowledge sharing. With ERASMUS+ guiding its trajectory, the CZU aims to navigate a future where academic exchange transcends borders in a measured and impactful manner.

More information is available on the faculty website: <https://www.ftz.czu.cz/en/r-9422-international-relations/r-10720-erasmus/r-16500-international-credit-mobility>.

COOPERATIVE PARTNERSHIPS

The FTZ is a partner in the Erasmus+ SCORE project "Structural Capacities for Tackling Wicked Problems Programme". The main coordinator of the project is the Ss. Cyril and Methodius University in Skopje, Macedonia. Other partners include Panepistimio Ioanninon (Greece) and Sofia University St Kliment Ohridski (Bulgaria). The implementation of the project with a budget of over 32,000 EUR is planned for the 2022 – 2025 period.

Modern policy implementations and organizational frameworks fail to create a sustainable approach to solving hard-to-identify problems that are a growing global challenge. These include problems that are difficult to define, or difficult to solve, and require different approaches to their ultimate solution. Poverty, climate change, health, gender equality and justice are all so-called "wicked" problems that are part of the SDG agenda. This project thus aims to create a cooperation structure and develop a model for solving these problems. Broader transnational capacities are involved, suggesting a bottom-up approach in social planning processes. The goal is to show that such a problem can be solved with a holistic approach.

The project supports and strengthens European cooperation on this topic, while also proposing and piloting new research in the fight against climate change. Specific topics to be addressed include the environment and climate change, interregional cooperation, and research and innovation. The project consortium will mutually benefit from active participation. Practically, project participants will be able to demonstrate determination and their ability to solve many problems in the relevant fields, thereby creating a basis for organisations to be able to implement such approaches. In addition, through the implementation of the project and subsequent phases, a new generation of participants will acquire the knowledge, tools and methods needed to solve wicked problems. The sharing of best practices and the development of interconnected higher education systems will be supported through the sustainability network, models, e-tools and guidelines developed within the project.

More information about the project is available on the website <https://score-eu.org/>.

ERASMUS MUNDUS JOINT MASTER'S DEGREE

The FTZ is a partner of the Erasmus Mundus Joint Master's Degree programme "Global Forestry" (GLOFOR) as part of the new concept of the Erasmus+ programme, mainly thanks to its English-taught programme "Tropical Forestry and Agroforestry". GLOFOR is organized by a consortium of five top European universities in the field of forestry under the leadership of the Danish University of Copenhagen. Other partners are AgroParisTech (France), Die Technische Universität, Dresden (Germany) and the University of Padua (Italy).

The consortium also cooperates with so-called "associate" partners, such as the University of Bamenda (Cameroon), Tribhuvan University (Nepal), ICRAF (Kenya), the Sokoine University of Agriculture (Tanzania)

and others. It is a two-year, English-taught, world-class Master's programme that prepares graduates to address the enormous current challenges and potential of forestry in middle- and low-income countries. Through a high level of research-based education, graduates will acquire the required competencies for working with global forestry issues, such as practical and international experience and openness to foreign cultures. These are all competencies needed to work both as a researcher and to work in the tropics, e.g. with a development agency, doing consultancy, NGOs, international organisations, ministries or government institutions. Successful students will also be able to apply to high-level international Ph.D. programmes.

The structure of the programme is as follows – during the first year, students will receive a thorough introduction to the local and global role of forestry in middle- and low-income countries. All students will spend their first semester in Copenhagen, where teachers from all universities in the consortium will join in the teaching activities. During February of the first year, all students and one teacher from each partner university participate in a joint field course in a middle- or low-income country. Students then move to either Dresden or Padua to complete their first year. In the second year, students focus on a specific specialisation at one of the other partner universities. More information about the project is available on the website <https://globalforestry.eu/>.

Preparation and organisation of summer schools and short-term courses

The organisation of summer schools and short-term intensive courses are among the priority areas of the international activities of the Faculty of Tropical AgriSciences. FTZ teachers and students are actively involved in the organisation and participate in the summer schools organised by both the FTZ and other faculties within the CZU.

SUMMER SCHOOL IN BOSNIA AND HERZEGOVINA

USE OF BY-PRODUCTS FROM LOCAL FOOD PROCESSING

The summer school took place from 2nd - 6th October 2023 at the Faculty of Agriculture and Food Technology, the University of Mostar (UM), in Bosnia-Herzegovina. A total of 31 students were trained. Teaching and organisation of the summer school was provided by academic staff from the FTZ (Iva Kučerová) and FAPPZ (Adéla Fraňková) in cooperation with academic staff from the UM (Adrijana Filipović)

The summer school was held at the Faculty of Agriculture and Food Technology, University of Mostar, in Bosnia and Herzegovina, including field trips to processing facilities. The summer school primarily focused on techniques and technologies for processing and producing by-products. Activities included methods for evaluating the quality of final products, including nutrient content and composition, improving the properties of bakery products, microbiological quality, and sensory analysis. The theoretical part of the course introduced students to general possibilities and industries where by-products can be utilised, particularly focusing on the processing of local fruits and vegetables and their use in the food industry. Emphasis was placed on techniques for obtaining non-traditional oils, producing alternative flour from by-products, and utilising these by-products in bakery, extraction of

bioactive compounds from fruit and vegetable peels, and the quality of the resulting products. In the practical part, participants tried oil pressing, evaluated the quality of the oils and suitability for human nutrition. They also explored the possibilities of using by-products as alternative flour and extracting bioactive compounds from by-products. The course concluded with sensory analysis, where participants evaluated selected samples of traditional foods. The entire summer course consisted of theoretical lectures followed by practical exercises in the laboratory and two field trips.

SUMMER SCHOOL IN CAMBODIA

ASAP CAMBODIA – ASSESSING THE SUSTAINABILITY OF AQUACULTURE PRODUCTION IN CAMBODIA

The ten-day Summer School took place from July 24 to August 4, 2023, and the key topic was focused on value chains of alternative aquaculture products. Within the 10-day programme, 12 students from the Royal Agricultural University (RUA) in Phnom Penh from 3 faculties and 4 Czech students from the Czech University of Life Sciences Prague (CZU) were trained.

As a part of the summer school programme, students were trained in cross-cutting topics such as innovative teaching methods and project-based learning methods. They also participated in presentations on capacity building in soft skills, mainly focusing on online tools and managers, searching, and verifying scientific resources. Participants developed theoretical knowledge as well as practical skills and soft skills in the field of aquaculture and the complexity of its value chains from farmer to market, placing all this in the wider context of biodiversity, sustainability, and ecology.

The theoretical and practical parts were organised in cooperation with the management of the faculties of RUA, namely the Faculty of Fisheries, Agricultural Industry and Agro-Economics, in order to meet the requirements of teachers and students as much as possible. The teaching was designed in such a way that the theoretical parts were appropriately supplemented with practical examples, where the students had the opportunity to try everything, and thus better absorb the theoretical knowledge. During the first days of the summer school, students were exposed to new teaching methods and were introduced to the project-based learning (PBL) concept, which was the teaching method throughout the summer school.

During the intensive course, the students were working on a specific topic in practice, from the formulation of their research aims, design of hypotheses, data collection process, data processing to the final presentations and scientific discussions.

The summer school also included a weekend excursion to Siam Reap province. The aim of this excursion was to acquaint the students with both aquaculture production and fisheries in the area with the largest production around Tonle Sap Lake, which is the main source of livelihood for a large part of the Cambodian population. It included data collection via a questionnaire survey, a visit to the Rathada farm and the local fishing community, and to the village of Chong Khneas in Siam Reap province.

SUMMER SCHOOL IN THAILAND

A summer school in Thailand called Value chain management was organized at the Prince of Songkla University (PSU) in Thailand from August 1 to 18, 2023. Four students from the CZU and seven students

from the PSU took part. Teaching and organisation of the summer school was provided by academic staff from the FTZ (Petra Chaloupková, Jiří Hejkrlik, and Olga Leuner) in cooperation with academic staff from the PSU (Rungrat Saeyang, Parittiya Saejew, Siriporn Prompat, and Chutima Tantikitti).

In the first week of the summer school, the students got to know the theoretical background of value chain management and the value chain evaluation methodology used by the European Commission as part of the Value chain for development (VC4D) project. Part of the summer school was the development of a case study on a selected product, so that students had the opportunity to prepare their own analysis in practice. The participants of the summer school were divided into three working groups and each group worked on the evaluation of the value chain of the selected product. The case studies focused on the evaluation of a value chain with three products - coffee, fish products (seabass) and aromatic coconut. As part of the assignment, they should focus on the functional analysis of the value chain and describe the product itself, how it is processed and describe the entire value chain from the farmer to the consumer. The study also included a social analysis and investigation of the impact of production on the environment. Students learned how to work and collect data using Nestforms. They created their own questionnaire and addressed the audience directly at a fair held at the Prince of Songkla University.

In the second week, students had the opportunity to visit farmers directly and conduct interviews with other actors in the value chain, such as processors and representatives of social enterprises and farmers' groups. They visited farms that focus on combined coffee production and agroforestry (bananas, papaya, dragon fruit, pomelo, coconut palm). During the excursions, participants visited PlaNeat, a company that processes fish (cooling, freezing, drying) and produces fish jerky. The company also has its own store with the mentioned products and its own restaurant. Another focus is their production of fertilizer from residues from fish processing.

In the third week of the summer school, the students focused on processing the collected data and created a poster, a PowerPoint presentation and a final report describing the entire value chain. They completed everything on the last day and received a certificate of completion of the summer school.

During the summer school, students also had an opportunity to collect data for their Bachelor's or Master's theses. Last but not least, negotiations took place regarding the joint double degree study programme, which is in the process of preparation between the FTZ and PSU. Furthermore, a selection procedure for a 3-month study internship at the CZU/FTZ for a student from the PSU was also announced.

SUMMER SCHOOL IN CZECH REPUBLIC

Green Horizons: AGRICULTURE AND LIFE SCIENCES

The summer school took place from 30th May – 31st July 2023 at the Faculty of Tropical AgriSciences, CZU in Prague. A total of 25 students from the University of Mostar-Bosnia-Herzegovina, Sumy State University Ukraine, Bila Tserkva National Agrarian University Ukraine, Sumy National Agrarian University Ukraine were trained, Teaching and organisation of the summer school was provided by staff and students from the CZU - FTA: Iva Kučerová, Hynek Roubík, Jan Staš Olga Leuner, Johana Rondevaldová, Petr Matějů, Klára Urbanová, Jiří Černý, Yelizaveta Chernysh, Viktoriia Chubur, Sadiq Musa, Jerico Consolacion, Radim Kotrba, Daniel Preininger, Anežka Daničková, Vladimír Krepl,

Seyma Celina, Ema Cetkovská, Tatiana Alexiou Ivanova, Běla Bonušová, Marek Jelínek, Jana Hummelová, CZU - KTV: Michal Štohanzl, Džemal Bijedić University in Mostar, Bosna-Herzegovina: Alisa Hadžiabulić.

The summer school focused on various aspects of scientific research and practical work. It spanned several weeks during which students were introduced to various areas. A brief overview of the individual courses as follows:

- Basic sample processing and analysis in animal husbandry: This course covered methods of sample processing and analysis in the field of animal husbandry.
- Food preservation: Students were introduced to various methods of food preservation.
- Introduction to parasitology: This course provided basic information about parasites.
- Bioinformatics: Introduction to bioinformatics and practical exercises.
- Sustainable biotechnologies and environmental protection: This course focused on sustainable technologies and environmental protection.
- Playing with genes: Introduction to basic bioinformatics tools and their applications: Students were introduced to bioinformatics tools and their use.
- Excursion: Visit to a unique agroforestry farm in Miskovice, Visits to farms focused on regenerative agriculture: the Mitrovsky Angus and a farm in Velké Hostěrádky
- Botanic garden: Introduction and practical exercises in the botanical garden
- Introduction to statistics in the R program: Introduction to statistics and practical exercises.
- Extensive aquaculture in the tropics; Integrated agriculture in the Specialized Secondary School: Lectures and seminars.
- Smart and funny saccharides: bioplastics, concrete, spheres: Lectures and seminars on interesting applications of saccharides.
- Renewable resources and waste management: Lectures and seminars.

Horizon Europe

Reproducibility is crucial to the progress and impact of Research and Innovation (R&I) as it confirms or corrects the outcomes of single studies, resulting in higher quality research, more reliable and implementable outcomes, and a reduction in research costs. Embedding reproducibility in the strategy and design of research should thus be regarded as a key precondition of research quality. Unfortunately, only a fraction of published studies can be reproduced due to science's need to be continuously innovative, pressure to publish, a lack of transparent reporting, and career assessments based on quantity rather than quality. Currently, the burden of improving reproducibility lies with the researchers, as there are limited- to no incentives to encourage active engagement in reproducibility and ideas for improvement have never been tested in practice. That is the reason for the OSIRIS project (funded by the European Union). In this project, the FTA is a leading WP.

Recently, the EC has prioritized addressing gender inequality in research and development (R&D) as a key objective. Regarding this, the FTZ also had success in the Horizon Europe calls with the support of the AGRIGEP project (The Assessment and Implementation of Agriculture and Life Science Universities' first Gender Equality Plans in widening

countries (2023 – 2025), No. 101094158), which brings together 6 partners in a consortium (besides the CZU, the Hungarian University of Life Sciences (Leader) (Hungary), the University of Primorska (Slovenia), La Universitat Politècnica de Catalunya BarcelonaTech (Spain), the Association for Hungarian Women in Science (NaTE) (Hungary), and Yellow Window (Belgium). This project aims to evaluate the status of Gender Equality Plan (GEP) implementation in universities, enhance capabilities through intensive capacity-building efforts, and devise and execute agriculture-specific GEPs focused on life sciences. These plans will include sector-specific measures and strategies aimed at driving long-term institutional reforms. Furthermore, the project promotes the integration of gender equality issues into the education system. In 2023, several activities on awareness-raising and capacity-strengthening of GE staff and academia were organised.

Agrinatura Association

The FTZ is an active member of the international organization Agrinatura Association, the Secretariat of which has been based at the CZU Prague since 2004. It is a unique institution of this type in Europe and is an important link between Europe and the Global South in agricultural research and education. The membership brings benefits in the form of exchange of information, contrasting visions, participation in international EU-funded projects and networking at a European and global level. Since 2019, the Secretary General has been Ing. Tereza Slámová, Ph.D., who is a recent graduate of the doctoral study programme at the FTZ. Since May 2021, Ing. Petra Chaloupková, Ph.D., Dr. h.c. holds the position of Vice-president of this association. Ing. Tereza Slámová, Ph.D., held the position of the Secretary General until December 2022. Since January 2023, the Agrinatura secretariat moved from its FTZ premises and the CZU, which kindly hosted its office for more than 18 years, to the next member institutions in Ireland.

Agrinatura member organizations are actively involved in a number of research and education projects focused primarily on developing countries in the Tropics. Agrinatura strengthened its partnership with various partner networks such as the ICA (the Association for European Life Science Universities), IROICA, RUFORUM (the Regional Universities Forum for Capacity Building in Agriculture), SEARCA (the Southeast Asian Regional Center for Graduate Study and Research in Agriculture), YPARD (Young Professionals in Agricultural Research for Development) and many more. Since 2016, the YPARD Secretariat has also been based at the CZU. Agrinatura is also standing committee of ICA.

Agrinatura also participates in dialogue with the European Commission's Directorate-General for International Partnerships (DG INTPA) leading to greater involvement of science and research in political decision-making. This new initiative also includes the Nutrition Research Facility (NRF), which provides information and data to the European Commission in the field of nutrition, and the DeSIRA Lift project, which contributes to climate, productive and sustainable transformation in agriculture and food systems in- and middle-income countries. Through Agrinatura, the FTZ participated in various ERAMUS+ capacity building projects (MS FSCC, PISAI) and submitted multiple applications jointly with other members.

The FTZ is actively involved in Agrinatura activities. In May 2023 the General Assembly and 2nd Agrinatura Conference was hosted by the FTZ from 10th May to 12th May. Almost 90 participants from 30 international institutions took part in these events and were actively engaged in the presentations, discussions, and networking sessions.

Their presence had a significant impact on the quality of the event and helped create a platform for exchange and collaboration among attendees.

Student ambassadors

The Student Ambassadors of the Faculty of Tropical AgriSciences (FTZ) have been actively engaged within the FTZ's Multicultural Centre for over three years. The team of 12 students from Europe, Asia and Africa are focusing on supporting newly arriving students via email by sharing their own experiences and through Welcome courses, leaflets and meetings. Student Ambassadors are also organising teambuilding activities, contributing to FTZ promotion (video, social media support, newsletter), providing links with alumni and friends of the faculty (quiz, art exhibition, Christmas event, Garden party), and cooperating with students and international organisations (BeFair, AIESEC, and YPARD). Moreover, they focus on sustainability issues (maintaining the Little Free Library in the FTZ lobby, organising plant swaps, Christmas swaps, and promoting eco-friendly activities). The Student Ambassadors cooperate closely with the Faculty to support students' academic and career growth, fostering a welcoming atmosphere and enhancing international outreach.





Faculty development

Strategic management support plan (PPSR)

PPSR projects are funded by the Ministry of Education, Youth and Sports of the Czech Republic (MSMT).

In 2023 the following projects were implemented within MSMT projects.

INCREASE THE USE OF DISTANCE LEARNING METHODS IN FULL-TIME STUDY PROGRAMMES

- **Sub-part:** Strengthening the quality of new forms of education
- **Coordinator:** Jiří Hejkrlik

The aim is to improve the availability of study materials in electronic form, and to introduce innovative solutions that will help to increase the efficiency and quality of distance education.

STRENGTHEN THE QUALITY, OPENNESS AND INTERNATIONALISATION OF DOCTORAL STUDIES

- **Coordinator:** Olga Leuner

International internships are an integral part of the Doctoral Study Programmes (DSP) at the FTZ, as they not only enhance the quality of the DSP but are also crucial in its internationalisation. The aim of this institutional plan sub-division is to support Ph.D. students in internships with a minimum duration of one month. These internships could be carried out at quality workplaces in the Czech Republic, but mainly abroad in institutions and in companies and other relevant organisations.

The following steps led to the achievement of the set objectives: i) announcement of the selection procedure (transparent conditions were drawn up and a selection committee was set up); ii) selection of students; iii) agreement with students: a contract was drawn up with each Ph.D. student containing the conditions linked to financial support;

iv) implementation of the internships: the Ph.D. students completed their internships at a Czech or foreign workplace; v) follow-up and feedback: the graduates of internships submitted reports on their stay.

Conclusion: A total of 7 students were supported.

COOPERATION OF THE FTZ WITH FOREIGN UNIVERSITIES AND INTERNATIONAL ORGANIZATIONS

- **Coordinator:** Petra Chaloupková

The goal of this project is to strengthen the strategic management of internationalisation through the support of cooperation via strategic partnerships and membership in international networks and organisations where the FTZ/CZU provides secretariats and is part of the management of these organisations (AGRINATURA, YPARD, ELLS), e.g. via joint projects and possible involvement in networks, in order to strengthen sustainable strategic management at all levels of the CZU, helping to reduce the administrative burden and strengthening investments in and social capital existing at the CZU (i.e. in the intellectual capital of the CZU). The project also includes the promotion of these networks among teachers and students and their involvement in joint activities.

SUPPORT OF STUDENT MOBILITIES ABROAD

- **Coordinator:** Petra Chaloupková

The aim of this project is to support the mobility of students and teachers beyond the scope of Erasmus+ projects and the development of global competences (skills to be acquired in an international academic and cultural environment) of students, in order to obtain high-quality and competent graduates who will actively contribute to the sustainability of life for the 21st century and to deepen the dimension of education in such a way as to form socially responsible graduates. The project supported 11 FTZ students who went for data collection abroad as part of the preparation of their diploma theses. They travelled to Cambodia, Cameroon, Thailand, Ethiopia, the Philippines, Nigeria and France.

PROMOTING AND REPORTING ON THE PRINCIPLES OF SOCIAL RESPONSIBILITY (CSR) OF THE FTZ/CZU

- **Main coordinator:** Jana Mazancová

This project organised events supporting social responsibility and sustainability (promoting fair-trade values and responsible consumer behaviour). Continuous communication of the theme was ensured through the website, FB and Instagram posts. Publicity for the CSR was ensured through publications placed on the website.

In addition, promotional leaflets and posters were created to promote the FTZ as a Fairtrade Faculty – printed leaflets and posters, paid advertising and recruitment campaigns presenting the FTZ as a responsible institution – Czech Universities, KamPoMAturitě.cz.

STRENGTHENING THE ACCESSIBILITY OF RESULTS OF CREATIVE ACTIVITIES TO THE GENERAL PUBLIC IN VARIOUS FORMS; PROMOTING THE POPULARISATION OF SCIENCE AND COMMUNICATION OF ITS CONTRIBUTION TO SOCIETY TO TARGET GROUPS

- **Coordinator:** Jana Mazancová

Within this project information about the FTZ's activities was disseminated through websites, Facebook and Instagram and media outlets.

The activities of the Faculty are aimed not only at introducing it to the general public and prospective students, but also at popularising scientific work, raising awareness of ongoing activities and, last but not least, strengthening the relationship between staff and students. Due to its disciplinary focus, the FTZ also focuses on events of an international nature, whether in terms of theme, target group (international participants) or the professional programmes in English, especially in the case of conferences. The external communication of all the activities of the Faculty and the popularization of scientific work to high school students and the general public was targeted mainly through the organisation of Open Days, participation in science-oriented festivals (ScienceFest, the Festival of Science in Letňany) and the organisation of events showcasing our activities (The Night of Scientists, the Garden Festival, the European Week of Sustainable Development).

Part of the media output included Podcasts prepared in cooperation with the CZU where we introduced our experts and their projects. In 2023 we released Podcasts with:

- Bohdan Lojka – Agroforestry
- Jiří Černý – The Viruses among us

The FTZ was also presented on other web portal VysokeSkoly.cz.

SUPPORTING THE ACTIVITIES OF STUDENT ORGANISATIONS AS ACTORS CONTRIBUTING TO THE QUALITY FUNCTIONING OF THE CZU, ESPECIALLY IN ITS EDUCATIONAL COMPONENT

- **Coordinator:** Jana Mazancová

Cooperation with student organisations at the FTZ

Due to its disciplinary focus, the FTZ also focuses on events of an international nature, whether in terms of theme, target group or

professional programmes in English. The organisation of events often works in cooperation with student organisations - Student Ambassadors, BeFair at the CZU and Antelope Conservation, which makes it easier to reach a wider range of participants with our activities.

Student organisations are involved in the organisation of Open Days and also participate in other public events where we present our activities (Scientists' Night, the Garden Festival, European Sustainable Development Week). Other events organised by Student Ambassadors, such as the Plant Swap, Christmas Swap and Art and Exhibition, help to strengthen the community and spread awareness of sustainability and environmental issues. The Learn and Discuss series of seminars that they host, where visitors have the opportunity to actively engage in discussion, have a similar goal.

The FTZ also maintains its status as a fairtrade faculty, to which the activities of the BeFair organisation contribute greatly. Examples include serving Fairtrade refreshments during the Fair Breakfast or providing information about the activities of the association at Faculty events.

The FTZ is also promoted within the Antelope Conservation Association, which aims to save the Derby antelope in Senegal and whose activities are carried out by teachers and students, especially from the FTZ/CZU in Prague. The society is also regularly involved in events at the FTZ and organises its own events and lectures.

EVENTS ORGANISED IN 2023

Open Days involving all student organisations – two-day events in January (20 - 21st January 2023), one-day events in March (24 March 2023) and November (1 November 2023).

The FTA Art and Craft Exhibition organised by Student Ambassadors 26. 4. 2023.

Participation in science festivals:

- Festival Vědy Letňany (8. - 10. 6. 2023)
- Vědafest Dejvice (21. 6. 2023)
- Noc vědců (Night of Scientists) (6. 10. 2023)

The FTA Christmas Swap organised by Student Ambassadors 4. - 15. 12. 2023

The BeFair Tropical Ball 5. 12. 2023

Learn and Discuss – Mistakes in Development Cooperation 7.12.2023

World Sustainable Development Week event:

- The FTA Plan Swap organised by Student Ambassadors 20. - 22. 9. 2023
- Fair Breakfast organised by BeFair (20. 9. 2023)

The FTZ in the media

The Faculty of Tropical AgriSciences gained great media coverage thanks to a study which was published in the journal *Science - Genomic analyses reveal poaching hotspots and illegal trade in pangolins from Africa to Asia*. The co-authors of the international study are scientists Barbora Černá Bolfíková, Ph.D., and her Ph.D. student Iva Bernáthová from the Faculty of Tropical Agriculture and Ph.D. student Markéta Swiacká from the Faculty of the Environment. The scientific journal *Science* is considered one of the most prestigious in the world and all the main Czech media covered this story.

The PR team also organised our Open Days and arranged participation at further public events (Scientists' Night, the Garden Festival, European Sustainable Development Week) and supported student organisation activities.

Activities of FTZ students and staff

BE FAIR AT THE FTZ/CZU

The year 2023 started with our Open Days in January and then in March where Be Fair presented their activities to prospective students. In September they also organised BeFair Breakfast and in mid-October, Faculty Day was celebrated, where Be Fair organised sports mini-games and provided refreshments.

The last event of 2023 was the "(Be)Fair Tropical Ball".

THE CZU MOBILAB

In 2023 we worked on improvement of the CZU mobiLAB to provide higher level of safety as well as to incorporate a higher number of tests which can be performed in field.

The "Study in Prague" Project

The Study in Prague Project is a joint effort of Prague universities (The Czech Technical University, Charles University, CZU Prague, The University of Economics and The University of Chemical Technology) to promote the capital city of Prague as an attractive place for international students.

Study in Prague (SiP) offers a unique choice of university studies from the five best and largest public universities in Prague. The study programmes offered are taught entirely in English, and the choice covers a wide spectrum, from Philology, Pedagogy, Social Sciences, Natural Sciences, Medicine, Architecture, Economics, and Management to Computer Science, Nanotechnology, Chemistry and Biotechnology, Mathematics, Nuclear Physics, Engineering, Agriculture and Forestry.

In particular, the SiP Project supports:

1. Active participation in international study fairs for post-secondary education.

2. Creation of joint printed promotional materials with the SiP logo, including the use of online marketing tools.
3. Involvement of self-paying students, organisation of one annual joint event for international students of participating HEIs.
4. Developing cooperation with international alumni.
5. Development of SiP social networks, expansion of the SiP website.
6. Participation in seminars on the recruitment of international students, quality improvement in foreign language programmes, etc.
7. Promotional trips to secondary schools with extended foreign language teaching (in the Czech Republic and abroad).
8. More information at <http://studyinprague.cz/>.

Operational Programme Research, Development and Education

The key principle of the Operational Programme Research, Development and Education (OP RDE) is the development of human resources for the knowledge economy and sustainable development for a socially cohesive society, and these are supported by interventions in the context of several priority axes (PA).

This is followed by support for quality research, for which a qualified workforce represents the key input factor. Interventions in the field of education will also be supported by systemic changes that aim to improve the educational system of the Czech Republic.

DRIVERS AND MECHANISMS OF HABITAT SELECTION AND MOVEMENT PATTERNS OF NATIVE UNGULATE COMMUNITIES IN RELATION TO RESOURCE DISTRIBUTION AND LIVESTOCK GRAZING IN WEST AFRICAN PROTECTED AREAS

- **Call number:** 02_19_074
- **Call title:** International mobility of researchers - MSCA-IF III
- **Project title:** Drivers and mechanisms of habitat selection and movement patterns of native ungulate communities in relation to resource distribution and livestock grazing in West African protected areas
- **Project Reg. No.:** CZ.02.2.69/0.0/0.0/19_074/0016295
- **Total eligible expenditure for the CZU:** 5 758 704 CZK
- **Project duration:** 1. 3. 2020 – 31. 5. 2023
- **Main investigator:** Prof. RNDr. Pavla Hejčmanová, Ph.D.

• Project annotation:

The objective of this project is to enable the mobility and fellowship of the FTZ researcher at prestigious scientific institutions abroad, specifically the Zoological Society of London, Institute of Zoology, and Swansea University in the United Kingdom, for professional growth and expertise expansion through a research project submitted to the MSCA-IF scheme of the Horizon 2020 programme.

The research goal was to link the environmental features of the savannah ecosystems of West Africa with the spatiotemporal behaviour of large herbivores and to reveal their influence on animal spatial distribution and movement in relation to the dynamic distribution of resources and livestock on the territory of protected areas.

MODERNISATION OF STUDIES AND STUDY PROGRAMMES, QUALITY AND CONSULTANCY AT THE CZU IN PRAGUE (THE "MOST" PROJECT)

- **Call number:** 02_16_015
- **Call title:** ESF call for universities
- **Project title:** Modernisation of studies and study programmes, quality, and consulting at the CZU in Prague
- **Project Reg. No.:** CZ.02.2.69/0.0/0.0/16_015/ 0002386
- **Total eligible expenses for the CZU:** 182,197,504.47 CZK
- **FTZ' total budget:** 6,429,000 CZK
- **Implementation of the Project:** 1 July 2017 – 1 July 2023

- **Project annotation:**

MOST is a comprehensive project of the Czech University of Life Sciences in Prague aimed at increasing the quality of higher education provided by: raising the professional level of academic staff; reworking existing and creating new study programmes taking into account modern teaching methods, labour market and practice needs; and the requirements of students with special needs via quality evaluation systems; and strengthening the strategic management of the CZU.

The project is divided into key activities and the Faculty participates in some of them. These are:

KA 2 improving educational activities and modern teaching trends,

KA 3 the creation of new, and the modification of the content of existing, Bachelor's and Master's Study Programmes, taking into account the needs of the labour market and the need for practical experience, and

KA 5 Strengthening internationalisation.

In 2022, the implementation of new study programmes created within the MOST Project in the University Information System was completed, and our first students successfully graduated. The preparation and development of a personal safety course for undergraduate students and an English language course for Faculty staff continued, enabling more staff to obtain a Cambridge Certificate in Advanced English in 2023, demonstrating a high level of English in teaching and creative faculty activities. The FTZ International Council, the so-called Advisory Board, was also supported as a part of the Development of International Cooperation and Staff Mobility. It meets annually at the FTZ and evaluates FTZ activities in the international field. In 2022, consultancy activities related to strengthening institutional and personal security management at the Faculty continued.

KA 5 – STRENGTHENING INTERNATIONALISATION

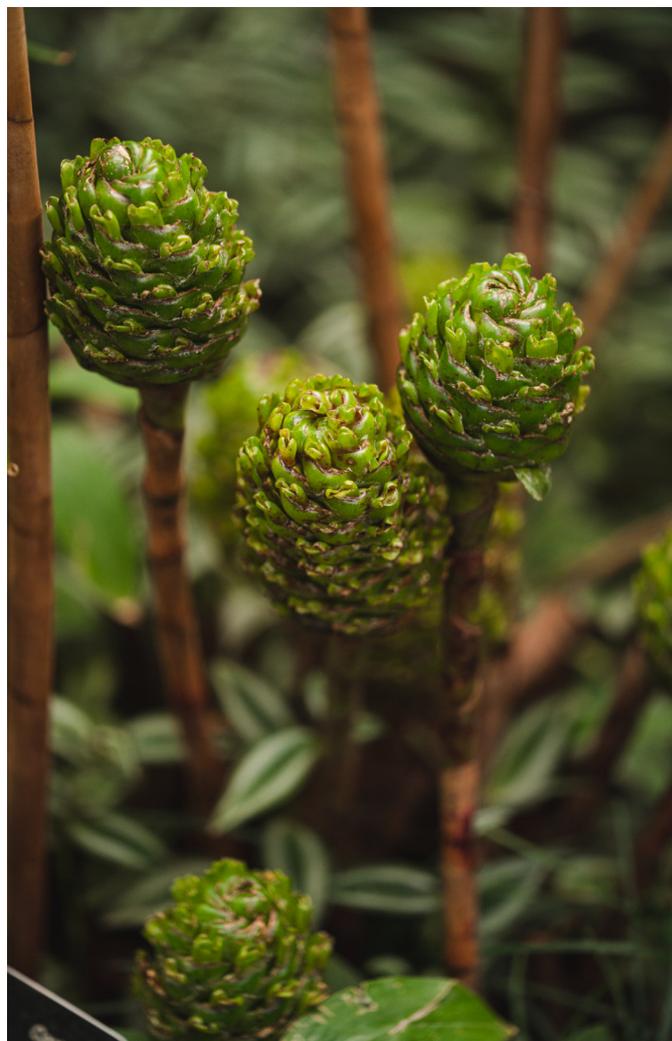
5.1 Development of relations with foreign institutions through Double Degree programmes – as part of this activity, a new Double Degree programme was created in cooperation with the partner University of Hohenheim in Germany which thematically focuses on tropical and subtropical areas. A new Master's programme called "Agricultural Sciences and Farming Systems in the Tropics and Subtropics" opened for applications to study in the academic year 2022/23, and now three students are studying this programme at FTZ; they will spend the next academic year 2023/24 studying and writing their diploma theses in Germany. More information about the programme is available on the website www.agritropics.eu.

5.2 Development of international cooperation, staff mobilities – as part of this activity, the so-called Advisory Board was created, which meets once per year at the FTZ and evaluates the activities of the FTZ in the international field. The fifth meeting of this Board in 2022 took place in a hybrid form due to the global pandemic of COVID-19. In addition, the members of the commission participated as honorary chairpersons of the final exams and student thesis defences. Furthermore, as part of this KA, two teachers travelled abroad for the purpose of developing their pedagogical competences.

5.3 Student mobility support – this activity supports studies at partner European universities within the so-called Summer Schools, which are increasingly popular among FTZ students. In 2022, two FTZ students were supported in participating in two summer schools.

INTERNATIONAL MOBILITY OF RESEARCHERS

The aim of this call is to support the professional growth of researchers and the development of research organisations through the strengthening of human resources and the strengthening of international cooperation. As part of this "PROMO II" project, the FTZ received financial support in 2020 for the employment of one incoming post-doc from abroad for 10 months, whose acceptance was planned for September 2021. In 2021, out of the total number of 44 applications submitted, the commission chose 29 valid ones. The best candidate was selected from Pakistan, but due to the visa situation associated with covid-19, his mobility did not start as planned, i.e. in 2021, but in July 2022. In view of his publishing activities, his position was extended until June 2023.



Financial report

Management of the state non-investment contribution and subsidies

TAB 6.1 DRAWING ON THE ALLOWANCE FOR EDUCATIONAL ACTIVITIES

	ALLOTTED (IN CZK)	DRAWN (IN CZK)
Wages and salaries	19 790 000	20 005 809
Payroll deductions 35.22%	6 970 065	6 841 954
Common elands and guanacos	500 000	500 000
Educational activities - operation	315 249	241 746
International Relations	50 000	35 805
TOTAL	27 625 314	27 625 314

TAB 6.2 DISBURSEMENT OF FUNDS FOR SPECIFIC UNIVERSITY RESEARCH

	SVV FTZ	SVV FTZ
The IGA Organisation	77 493	77 493
Organisation of a student scientific conference	230 000	230 000
Internal grants	3 260 000	3 260 000
TOTAL	3 567 493	3 567 493
BUDGET AMOUNT 2023 / EXPENDITURE 2023	31 192 807	31 192 807

TAB 6.3 DISBURSEMENT OF INSTITUTIONAL SUPPORT

	RVO FTZ	RVO FTZ
Capital funds	0	0
Wages and salaries	10 468 130	10 543 781
Payroll deductions	3 686 878	3 717 164
Scholarships	157 000	208 810
Other current assets	877 071	719 324
TOTAL	15 189 079	15 189 079
BUDGET AMOUNT 2023 / EXPENDITURE 2023	46 381 886	46 381 886

TAB 6.4 OTHER

University of the Third Age	37 000	37 000
Students with Specific Needs	129 317	129 317
Basic subsidy for students with governmental scholarship (category B)	0	0
Basic subsidy for foreign students, students with governmental scholarships – English language teaching (category G)	380 678	380 678
Government scholarships B	0	0
Government scholarships (category G)	1 244 000	1 244 000
Achievement and exceptional scholarships for government scholarship holders	0	0
Achievement and exceptional government scholarships (category G)	217 000	217 000
Allowance for short stays	339 086	339 086
DSP Scholarships	10 901 250	10 901 250

TAB 6.5 PROJECTS FOR SUPPORT OF STRATEGIC MANAGEMENT:

PSSM NON-INV	1 225 600	1 225 600
PSSM INV	0	0



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