CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Tropical AgriSciences

Strategic Plan

2015 - 2020

December, 2014

Faculty Overview

Faculty of Tropical AgriSciences (FTA) at the Czech University of Life Sciences Prague is unique institution in the Czech Republic with over fifty years of tradition in tropical agriculture, rural development and sustainable management of natural resources in the tropics. Faculty of Tropical AgriSciences offers studies in bachelor's, master's and doctoral study programmes. The study in master's and doctoral programmes is completely in English. A significant part of our students are students from abroad. During the study we support the student's internships at partner universities from both EU and non EU countries. In case of masters and PhD students we support the practical training and research activities related to their diploma and/or doctoral thesis in the tropical regions. Among the most important topics of our interest are tropical agriculture, conservation and sustainable management of natural resources, rural development, appropriate technologies based on renewable sources of energy, economics and rural sociology in the developing countries. Our graduates are usually employed in the private sector, in national or international governmental and/or non-governmental institutions that generally deal with issues relating to the developing countries, trade, education and technology transfer as well as scientific and research activities in the tropics. Our academic staff includes 36 members of which 5 are full professors, 10 associate professors, 18 assistant professors and 3 postdocs. They are involved in the delivery of nearly 107 courses to 611 undergraduate and postgraduate students. All our activities are also supported by 20 permanent technicians and administrative staff.

Mission and Vision

The mission of the Faculty:

Our faculty is committed to recruit the world's promising students and deliver them a truly international higher education in the fields of tropical agriculture, rural development and sustainable management of natural and energy resources in the tropics. An integral part of our mission is the Research and Development in the field of tropical life sciences and the application of R&D results to the specific conditions of tropical and/or developing countries to improve life for individuals and societies worldwide.

The vision of the Faculty:

The aspiration of the faculty is to be an excellent and exceptional institution in the Czech Republic with orientation on the latest knowledge and technology transfer between the Czech Republic, EU and tropical regions with the respect to the traditional values of local communities of the developing world as well as the level of their socio-economic and technological development. We urge to be the first choice establishment for students who seek highest quality learning to become globally competitive workforce; for researchers and lecturers, who seek the best opportunity to achieve a significant global impact and at the same time are able to share their knowledge with others; and for businesses that seek partners with innovative and creative approach.

Faculty Departments

Department of Animal Sciences and Food Processing (DASFP)

The teaching and research is currently divided into two main areas corresponding to the master study branches: Animal and Food Science in TS and Wildlife Management in the Tropics and Subtropics. Both branches are mostly focused to the animal production; the first being directed to domestic animals and the optimization of their production in conditions of tropical and less developed countries, the second being focused on wild animals and their use in the context of ecological conditions and conservation of species and their habitats.

Department of Crop Sciences and Agroforestry (DCSA)

The Department of Crop Sciences and Agroforestry is focused on tropical plant production, agroforestry and tropical plant ecology. The department aims to contribute to higher sustainability, productivity and resilience of smallholder's farming systems in tropical and subtropical regions through increased use of plant resources diversity.

Department of Economics and Development (DED)

Main focus of the Department of Economics and Development is to contribute to higher sustainability, productivity and resilience of farming systems in tropical or less developed regions worldwide through increased efficiency of using household resources, support cooperative movements, market-access strategies and knowledge transfer.

Department of Sustainable Technologies (DST)

The main objective of the department is undergraduate and postgraduate education as well as the research focused on implementation of appropriate technologies for rural development. The research has contributed substantially to the development of appropriate and sustainable technologies to improve the livelihood in tropical and/or developing countries. According to this the main activities of DST are oriented to three main research branches such as technology for food processing, environmental engineering and rural sociology including the monitoring of implemented technology and its socio-environmental impact.

Scope of the Strategic Plan

The Strategic Plan of the Faculty of Tropical AgriSciences serves as a guide for the next five years (2015 – 2020) in terms of the areas in which we are dedicated to effecting positive change and strengthening the Faculty. The scope of this document is to be prescriptive of new ideas that might be implemented in priority areas of FTA such as education, research, international relations, human resources, facilities and infrastructure. Presented ideas and operational plans will be updated regularly to ensure that our strategic goals could be achieved at the end of 2020.

Five Priority Areas

1. Undergraduate and Postgraduate Education

Main goal of our faculty is to provide a modern and relevant education based on academic excellence. In order to support all of our students, we as a faculty must continue to provide the highest standard of teaching excellence in all our study branches and study programmes. Branches and programmes of our interest follow:

"*Animal and Food Science in the Tropics and Subtropics*" is a study branch for MSc students. This study branch currently provides students with high quality background in areas of domestic animal husbandry, nutrition, reproduction, epizootology, behaviour and quality of animal products. For the future, we would benefit from the improvement in teaching activities in the field of animal nutrition and feeding, reproductive biology, sperm quality and meat science. The teaching activities would also benefit from an expert for the large animal husbandry and production (especially the cattle, buffaloes and llamas) with the experience with husbandry in tropical countries.

"*Wildlife Management in the Tropics and Subtropics*" is designed as MSc study program and provides students with high quality background in the field of zoology, ecology, animal behaviour and conservation, management and breeding of indigenous species of animals in tropical areas. The FTA members have profound experience mainly from African countries and the study branch would benefit from the wildlife management experience form other regions (South Eastern Asia, Latin America).

"*Tropical Crop Management and Ecology*" and **"*Tropical Forestry and Agroforestry*"** are MSc study programmes focused on production and agroecology of tropical crops with a special orientation on traditional and ecological agricultural systems (e.g. agroforestry) as well as modern production methods (e.g. plant biotechnologies), complemented with specialized scientific disciplines, such as ethnobotany.

Master programmes **"*International Development and Agricultural Economics*"** and **"*Sustainable Rural Development in the Tropics and Subtropics*"** presents the core of the teaching activities related to rural development and economics. Teaching subjects are focused on international institutions, official assistance and trade, farming and rural systems development at the level of households and smaller territorial-administrative units as well as on technology for food processing, environmental engineering and rural sociology.

In the next five years new courses and/or study branches that would cover the topics such as management of tropical soils, control of tropical pest and diseases, tropical aquaculture, food security and human ecology should be implemented or nearly prepared with in this strategy of FTA for 2015-20.

To strengthen learning in the FTA, we will complement our commitment to experiential learning with increased use of online and e-learning tools. We will establish mechanisms to support all of our students in developing a broader diversity of skills in areas such as critical thinking, communications, ethics and experimental methods, all of which are crucial for a scientific education.

At the postgraduate level, experiential learning is an important part of our study programs, given the research-intensive nature of our disciplines and giving an excellent example of the importance of learning by doing. Over the next five years, we will profound our co-operative education and experiential learning.

As Faculty of Tropical AgriSciences we are interested to have international students so we will keep offering all our study programs for postgraduates in English. Within two years we will increase the number of English programmes for undergraduate students as well. Actually we offering two study programmes for undergraduate students "***Agriculture in Tropics and Subtropics***" and "***Sustainable Development in the Tropics and Subtropics***" both taught in Czech. The new study programme for undergraduate students "***International Cooperation in Agriculture Development***" in English is will be prepared.

Behind the study programmes we will pay more attention on alumni development. Beginning with first year, we will lay the foundation for lifelong relationships between our students and FTA.

2. Science and Research

To promote increased productivity in research over the next five years from 2015 to 2020, we have to understand our strengths and continue to build on them. The main research priorities of FTA will be based on following topics. Research activities focused on animal sciences are currently well developed mostly in the field of parasitology. In case of wildlife management we are focused mainly on (molecular) ecology, wildlife conservation, animal nutrition and behaviour, breeding management, reproductive biology and quality of the final products. New research activities within resource ecology domain arise modestly at the

department, connected with foraging ecology. As to the crop sciences, the research aims to identify novel crops (neglected and/or underutilized species with promising economic value) their conservation/domestication and to explore opportunities for their commercial use. Through this approach we would like to contribute to extension of the scope of cultivated crops and food security and sovereignty, nutrition and health of the smallholder farming communities in the developing world. We also conduct ethnoecological studies of smallholder's farming systems with the aim to determine cultivated and wild plant diversity and traditional practices related to production and use of plant resources. Two of our three laboratories focus on crop improvement through biotechnological applications in plant sciences. Molecular biology lab is oriented on genetic characterization of plant resources, currently focusing on studies of population genetics of various underutilized crops and agroforestry trees tissue culture section focuses on micropropagation and plant breeding using biotechnological methods. Nutritional, phytochemical and pharmacological research performed by the Laboratory of ethnobotany and ethnopharmacology is focused on identification of novel foods with increased nutritional and health benefits as well as on development of high added-value products (natural food additives) utilizable in food and pharmaceutical industries to substitute potentially hazardous chemical additives. Further research includes the studies of biodiversity in agroforestry systems.

The main research activities in the economical branch might be divided in to three areas. First is linked to analysis of current efficiency of different farming systems through the analysis of using external/internal resources, exploring market channels, and commercialization of agricultural products, including those whose market potential has not yet been fully recognized. Second, national-based surveys on analysis of cooperation movement and system of traceability of agricultural production for international trade (incl. Fair-Trade) particularly in transitional economies. Last topic is connected to microfinance system development and analysis, development finance analysis and banking system in developing world.

Finally the research activities of FTA will be oriented to the implementation of appropriate technologies for rural development. The research in this case has contributed substantially to the development of appropriate and sustainable technologies to improve the livelihood in tropical and/or developing countries. Main research topics are related to food processing technologies based on renewable energy resources, using of natural preservatives in food processing technology, appropriate technology for organic waste treatment, investigation of biomass as potential source of energy and rural sociology including the monitoring of implemented technology and its socio-environmental impact.

Maximizing our success in securing research funding is one of the crucial factors that will be critical for the continuing growth of our research activity. The research funding environment today includes an ever-increasing number of opportunities requiring large and diverse collaborative teams in order to ensure globally relevant solutions that can be discovered and implemented.

We will support a collaborative grants team to facilitate the identification of potential research clusters and support coordinated grant applications. This goal will be supported as well by the internal grant agency of the Faculty of Tropical AgriSciences. We will participate in increased international partnerships and bilateral funding together with facilitating large interdisciplinary projects that involve multi-sectorial partnership. We will keep our excellent position in Research for Development projects financed within the Czech Development Cooperation program. In the last five years we have implemented more than 30 ODA projects in 14 different developing countries.

We would like to establish stronger levels of engagement with private sector mainly in fields of identification of research topics, financing of partial FTA research activities and collaborative grant applications.

Additionally, we will better communicate our research through engaging materials made accessible via FTA online presence as well as through traditional and social media. By improving the communication of our research outcomes, we will raise the visibility of the Faculty of Tropical AgriSciences and subsequently we will increase our future opportunities.

3. International Relations

The international activities are one of the faculty pillars since we have strong orientation on international education and cooperation with foreign territories. In the next five years we have to concentrate our efforts to core activities on international networks and bilateral cooperation in research, development and education.

In case of international network the FTA will keep its key role in the international organization AGRINATURA. AGRINATURA is the alliance of 31 European universities and research organizations working in agricultural research, education, training and capacity strengthening for development. FTA will keep its position in Board of directors. In the next five years we will enforce strengthen our cooperation with African partners with in Horizon project PROIntense Africa.

FTA will be active in international mobility programs such as Erasmus Mundus and in the future Erasmus+ financed by EU (EACEA - Education, Audiovisual and Culture Executive Agency). Nowadays we coordinate three Erasmus Mundus projects Eurasia2, Ask Asia and ALFABET and we are members of consortium in EULAlinks/EULALinks Sense. These projects are excellent tool for the acquisition of students from abroad as well as they provide large platform for further inter-institutional scientific cooperation and joint project preparation. In the period 2015 – 20 we will keep our strong position in mobility projects and we have to do our best to extend this activity to apply for research and development projects based on international consortia.

Beside above mentioned activities FTA will put special effort on international cooperation based on bilateral agreements. In this case we will consider namely European mobility

program Lifelong Learning Programme (Erasmus) and wide range of Research for Development projects financed under the International Development Cooperation programmes. The international ODA projects bring good opportunity to increase our research activities in tropical environments and developing countries, as well as to organize several educational projects such as international summer schools.

In the future we will keep working on set of activities improving the international environment of FTA. Some of those are: increasing the number of international students; increasing the number of foreign academic staff; keeping English as main teaching language, improve the English of faculty administrative staff (mainly on student and human resources departments).

4. Human Resources Strategy

Basic principles of Human Resources Strategy (HRS) should be based on promoting a respectful and welcoming environment where the best high-performing staff is able to integrate their personal and professional priorities while advancing and supporting the FTA mission and vision. The FTA's core values suggest the creation and maintenance of a workplace that provides respect, dignity, and fairness to all employees across all job classifications and units. The HRS will also respect specific conditions of academic environment in the Czech Republic where all study programs must be accredited by the Accreditation Commission Czech Republic (ACCR). The Accreditation Commission takes care of the quality of higher education and carries out comprehensive evaluation of the teaching, scientific, research, development and innovative work, artistic and other creative activities of higher education institutions. One of the most important factors of the quality of study program evaluated by ACCR is a number of excellent full and associated professors with high qulity publications and full employment contract with the university.

Actual numbers of academic staff at FTA is as follows:

Full professors	5
Associate professors	10
Assistant professors	18
Post-docs	3
Total	**36**

We would like to build mainly on the current Faculty team and increase its quality by further strengthening the full and associate professors chairs. Our target for 2020 is to increase the number of full professors by five and associate professors by ten, all with full employments contracts. This target may be significantly supported by the fact, that FTA has received the official accreditation for habitation and professorship procedures by ACCR, which is valid until 2020.

Special effort will be put on new post-doc position at the faculty. We will look mainly for young and excellent researchers from abroad. Number of post-doc positions should be increased by higher financial support; both from the faculty budget and from the specific fellowship grants and projects.

To increase the motivation of our postgraduate students in their research activities we will establish new science graduate student award.

In future five years we should to enhance human resources in specific carriers according to education and research strategy needs of each department.

In coherence with FTA orientation we will support the international mobility and fellowships of our staff to seek for higher work experience, new contacts and increasing joint collaboration with partner institutions.

As the academic body we are strongly dependent on our academic staff. However, our HRS will be also focused on technicians and administrative staff of the FTA. We would like to be an exemplary employer across the entire spectrum of staff. Provide job skill training to staff in a variety of venues. Make greater use of short courses (even online) and training to develop needed skills. Encourage staff to take advantage of the university “health and well-being” programmes.

5. Facilities and Infrastructure

The availability of high-quality space plays a crucial role in the success of all institutions engaged in tertiary education and novel research, particularly those engaged in life sciences, tropical agriculture and sustainable development. The aim of our Faculty in this filed is to provide safe, advanced and fully-serviced laboratories and teaching rooms for our researchers and students.

Since 2013 the Faculty of Tropical AgriSciences has a new complex of laboratories ensuring adequate research environment for more than half research and pedagogical activities of FTA. The laboratories located in “ T - building” are Laboratory of Ethnobotany and Ethnopharmacology, Laboratory of Molecular Biology, Plant Tissue Culture Laboratory, Laboratory of Food Processing Technology and Laboratory of Biofuels. Other laboratory facilities of FTA are such as Laboratory of parasitology, Laboratory of health, reproduction and bone biology monitoring and Laboratory of Environmental Technology are located in non-suitable environments in different part of the university campus. The same and even worse situation is in case of classrooms, lecture rooms, offices and other facilities of the Faculty. These are spread in different buildings of the university campus and some of them, particularly the lecture rooms are in not acceptable conditions. To solve this problem we have to concentrate all our effort in next five years strategy to construct a new main Faculty building. The new Science Teaching Complex of FTA, with its state-of-the-art lecture rooms, teaching and research laboratories and offices will be a tremendous addition to science,

research and pedagogic outcomes of FTA. As such, it will be crucial for us to expand our mission with regards to novel research.

Since 2006, the Faculty is running an experimental farm of common elands (*Taurotragus oryx*) and since 2009 also guanacos (*Lama guanicoe*) at CULS Farm Estate Lány. Both breeding groups are subject of research and serve for practical demonstrations, training, elaboration of master theses and production of animals for breeding and meat. In 2015, installation of new handling system will be realized to sample animals without anesthesia and used for electro ejaculation, and regular weighting. It would also serve for improvement of assisted reproduction techniques. New potential to increase capacity of eland facilities exist through adaptation and reconstruction of neighbouring chicken house, which may serve for intensive fattening of young stock.

Very substantial and specific part of our Faculty is Botanical Garden of Faculty of Tropical AgriSciences. It was built simultaneously with the whole complex of the Czech University of Life Sciences Prague and it has been working since 1968. The Botanical Garden is subdivided according to the temperature requirements of the plants and working methods into: Tropical Greenhouse, Subtropical Greenhouse, Table Greenhouse, Lysimetric Greenhouse, Mixed Greenhouse, and Plastic Greenhouses. The main purpose of the Botanical Garden is a teaching and research work place for FTA students and researchers. However, the Tropical and Subtropical Greenhouses are open for the public. About 110 crop species are grown in soil in the Tropical Greenhouse. Visitors can see plants species which are used for consumption, stimulatory food, spices, medicinal plants, textile plants, cereals and tuber crops. Representatives of these groups include bananas, the mangoes, pineapples, passion fruit, papaya, vanilla, cacao, coffee, cinnamon, pepper and many others. The Subtropical Greenhouse is similar in specialization to the Tropical Greenhouse but with a different range of species. A collection of 40 crop species are grown there. These species require low temperatures in winter. The main species found in the Subtropical Greenhouse are citrus species and less well-known crop species. Especially the Tropical Greenhouse is in emergency condition and needs a comprehensive reconstruction. So the complete reconstruction of FTA greenhouses particularly the Tropical Greenhouse is one of additional targets for 2015 – 2020, eventually for next planning period.