



**Strategic program of scientific
research at the
Faculty of Agriculture
2014 - 2018**

Strategic program of scientific research 2014 - 2018

The mission of the Faculty of Agriculture (PFOS) is to develop and systematically improve the dynamic and multidisciplinary field of research in which all of the research potentials will be used to its maximum so that the enhancement of the existing knowledge base and the development of the new one will become a constant. Such environment ensures an excellent transfer of the newest understandings and skills for the students and gives them the opportunity to work with the highest ranking agricultural experts, who will in turn use this newfound knowledge in the production process. The Faculty (PFOS) serves the community and contributes to the growth of the society as a whole with its scientific surroundings and by educating agronomist experts, along with the continuous development of the knowledge base and life-long education skills. In line with its defined mission, the Faculty of Agriculture (PFOS) will systematically encourage the expansion of research and scientific projects in cooperation with national and European institutions in accordance with these strategies: Europe 2020 Flagship Initiative "Innovation union", EIT's Strategic Innovation Agenda (SIA) "Investing in Innovation Beyond 2014", Europe 2020 - A strategy for smart, sustainable and inclusive growth and finally the program Horizon 2020.

Scientific potential

The Faculty of Agriculture (PFOS) has a significant research capacity that will ensure the realization of the given strategic program. The Faculty currently employs 109 PhD-s and in the academic year 2012/2013 there were 119 projects being conducted (domestic and international). Its spacious capacity allows for further systemic development of the research potential. Scientific-research activity is being carried out on a total of 2,958.3 m² of surface area, which is divided into 21 practice classrooms with the square surface of 1169.2 m², 35 laboratories with a surface of 1656.3 m² and three common areas with a total of 132.8 m². The research is also being conducted on experimental plots - in the area of Erdut (on a location called "Mišino brdo"), at Đakovo's wine area (Mandićevac), in the Antunovac surroundings (experimental plot Antunovac).

The Faculty of Agriculture has a unique position in the center of the agricultural region, which, along with its long-lasting tradition, strong cooperation with the local economy and local government and a considerable scientific productivity, naturally grants the Faculty the position of a leading scientific-educational institution in the region.

The Faculty will especially put an accent on promoting and affirming its own brand in regional and international scientific and research circles and on expanding the businesses ensuing from its own professional activities, with an aim at new clients in the area.

SWOT analysis of the scientific potential

Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Excellence in Scientific Work 2. Existing International Cooperation 3. Excellent scientific reputation on a national level 4. Existing scientific infrastructure 5. Existing strategy in which one of the goals is the improvement of research capacities according to policies of the EU, including priority areas and research themes 6. Unique geographic position and environment 7. Competent scientific-educational staff with a leading role in the region 	<ol style="list-style-type: none"> 1. Insufficient connection between laboratories and researchers inside the Faculty of Agriculture (PFOS) 2. Lack of new equipment and an irrational usage of the old equipment 3. Poor visibility in European Research Area (ERA) 4. Insufficient financial sources for research and improvement of young researchers 5. Lack of experienced researchers in certain fields of research 6. Insufficient mobility towards leading EU institutions
Opportunities	Threats
<ol style="list-style-type: none"> 1. Leading institution in the field of sustainable agriculture in Southeast Europe 2. Development aimed at positioning itself as an equal and significant partner in the ERA 3. Improvement of the research capacity which will enable a stronger bond with the agro-industrial complex and development of common projects 4. The interest of local and regional authorities for development of research clusters 5. Employment of experienced researchers who came back 6. Finance and cooperation through Horizon 2020 and structural funds 7. Necessity of adjusting the investments for research and development of all EU member states on a joint level will cause an increase of appropriations for science on a yearly level of the GDP in Croatia 	<ol style="list-style-type: none"> 1. Slow development and creation of new knowledge in the area of sustainable agriculture 2. Loss of business opportunities and knowledge transfers into the economy 3. Inability of attracting top level researches and holding onto the present ones 4. Insufficient state investment into science and scientific infrastructure which in turn causes backwardness and diminished possibilities of acquiring competitive scientific projects 5. Uncertainty in finding employment for young researchers of the surrounding areas 6. Uncertainty in finding employment for young scientists

Priority areas and research themes from 2014 to 2018

On basis of analyzed European strategies and their sections which are linked to scientific studies in the field of biotechnology, as well as on grounds of existing capacities set for research in the period of 2014 to 2018, the explorative activities of the Faculty of Agriculture (PFOS) will be focused on the development of interdisciplinary studies in the research areas and themes set out below:

1. SUSTAINABLE AGRICULTURE WITH THE AIM OF HIGH QUALITY FOOD PRODUCTION

a. Production systems

Research of new technological systems in crop and animal production with overcoming the stressful conditions of agrobiocenosis induced by climate change and overstressing the eco-system by optimizing ground and water control, crop maintenance and agro-techniques.

b. Bio fortification and product enrichment

Research of biochemical, physiological and genetic mechanisms of bio fortification and enrichment of animal products with essential nutrients and barrier mechanisms against toxic elements in the ground-plant-animal system towards creating food that is safer and of higher quality.

c. Development of functional products

Research of mechanisms of bio synthesis, distribution and accumulation of functional compounds of animal and vegetable origins, research of functioning mechanisms of secondary vegetable metabolites and exploration of agro-technical measures of ecosystem management in sight of transfer and the usage of those mechanisms in natural and productive systems.

2. ENVIRONMENT AND SOIL PROTECTION

a. Soil protection

Research of physical, chemical and biological characteristics of the soil and the influence of the management of those resources on health and soil quality, in order to protect the environment and to increase the agricultural productivity.

b. Environment protection

Research of the influence of agricultural production and the usage of natural resources on environmental components and biodiversity with the aim of creating a good and quality coexistence in a natural environment; the research involves a constant acquirement of data, risk assessments, systemic monitoring and appraisal of the plant and animal kingdoms and their habitats.

c. Sustainable energy for environment protection

Research of possibilities of using biomasses and by-products and waste from agro-production for the production of energy with the aim of environment protection and lowering the harmful influence of the agro-production.

3. USAGE AND PRESERVATION OF GENETIC RESOURCES

a. Preservation of genetic resources

Research and acquirement of old, regional, original, protected varieties and species that represent important genetic materials and which loss could have a disastrous effects on future selections and agricultural production.

b. Usage of genetic resources

Research of genetic basis of acquired genetic resources using molecular techniques and biotechnological methods and their application in selection processes.

4. AGRO ECONOMIC ASPECTS OF SUSTAINABLE AGRICULTURAL PRODUCTION

a. Rural development

Research of the influence of sustainable agricultural production on the possibility of developing rural environments and the way they are functioning, with the emphasis on family farms and certain models of organizing the agricultural production.

b. Marketing with the market of agricultural products

Research of needs and market trends of agricultural products with the emphasis on high quality and functional products along with the consumer request analysis; research of marketing activities in order of increasing of consumption of high quality and functional products.

Strategic aims of research activities from 2014 to 2018

According to the carried out SWOT analysis and the defined priority areas of research, these next strategic aims of the scientific research program have been defined for the period of 2014 – 2018:

1. Constant improvement of the quality of scientific research and the development of the multidisciplinary research background with efficient usage of existing research capabilities.
2. Improvement of the quality of postgraduate programs and of young scientists and researchers.
3. Intensification of scientific activities on the international level.

Strategic aim 1.

Constant improvement of the scientific research quality and the development of the multidisciplinary research background with efficient usage of existing research capabilities

Aim 1.1.: Constant expansion of the number of published scientific papers indexed at CC and SCI along with the publication of papers in magazines with a higher level of international visibility (Q2 and Q1).

Aim 1.2.: An increase of the quantity of applications for scientific projects and an increase of the number of approved scientific projects.

Aim 1.3.: Encouragement of research mergers inside the research community and other research groups of other University constituent units.

Aim 1.4: Foundation of a Research center for Agricultural research and applied life sciences (ALIS) in which capital and other research equipment could be consolidate which would lead to a more efficient usage of the equipment.

Aim 1.5: An increase of the number of guest researchers at the Faculty of Agriculture and encouragement for PFOS professors to be guest lecturers at other universities.

Aim 1.6: Ensuring the admission of young scientists and researchers.

Aim 1.7: Ensuring the administrative support for scientific research, specialization leave, organization of the arrival of guest researchers, industrial contacts etc. – Research and development office.

Aim 1.8: Creation of a list of equipment used for scientific research at the Faculty of Agriculture (PFOS).

Aim 1.9: Development of experimental plots for scientific research.

Strategic aim 2.

Improvement of the quality of postgraduate programs and of young scientists and researchers

Aim 2.1: Reorganizing postgraduate studies so as to increase the number and the quality of mentors at the doctoral studies with an objective of including teachers, who have not taken part in mentorship but have been chosen to scientific and teaching positions, to be included as supervising mentors.

Aim 2.2.: Systemic increase of defended doctoral dissertations.

Aim 2.3.: Increase of the number of students enrolled in postgraduate programs, especially the students who will join the program but come from other institutions or from the private sector.

Aim 2.4.: Development of a system that will stimulate the best graduate students to enroll into postgraduate programs, and will also enable them to choose a quality research theme and a supervising mentor.

Aim 2.5: Ensuring that some parts of scientific researches could be realized at other institutions in land or abroad – at excellence centers – where postgraduate candidates would be able to achieve the highest level of knowledge in certain scientific fields.

Strategic aim 3.

Intensification of scientific activities on the international level

Aim 3.1.: Formation of an International relations office, which would, in its work scope, encompass all the international activities of the Faculty of Agriculture. The department for international projects of the office would monitor the application processes for projects and calls for cooperation. The employees of the office would have to be trained for preparing admission forms for international projects and their handling, after which they could give the administrative support to researchers during the admission and project management stages.

Aim 3.2.: Formation of a Faculty fund for cooperation with international institutions, which would serve as a subsidy or support for employee's leaving on a short visit abroad for the purpose of negotiating cooperation, preparation and creation of projects with foreign partners.

Aim 3.3.: Development of a stimulating award system for employees which are active in international research projects. The award system could be based on financial stimulation but it could also be based on a ranking system for acquiring new research equipment, during admissions of young researchers and assistants, or handing out positions in Faculty boards or institutes.

Aim 3.4.: An increase of the number of entries for the Horizon 2020 program.

Aim 3.5: An increase of the number of PhD students coming from abroad, for which it is necessary to ensure the implementation of doctoral study modules in English language. An increase of post-doc students and researchers from abroad through international exchange programs and scholarships.

Strategic aim 1.

Constant improvement of the scientific research quality and the development of the multidisciplinary research background with efficient usage of existing research capabilities

Mission	Indicators	Monitoring mechanisms	Responsible persons	Implementation date
1.1.	Number of published papers indexed at CC and SCI Number of papers sent to be published in magazines indexed at CC/SCI	Comparison with the previous period	Vice-dean for science; Vice-dean for Quality and Lifelong Education; Head of the Research and Development Office	Report issued by the 30 th November each year
1.2.	Number of applications for scientific projects. Number of approved scientific projects	Comparison with the previous period	Vice-dean for science; Head of the Research and Development Office	Report issued by the 30 th November each year
1.3.	Number of applied/approved projects shared with other University constituent units. Number of published papers shared with researchers from other University constituent units. Number of joint doctoral dissertations	Comparison with the previous period	Vice-dean for science; Head of the Research and Development Office	Report issued by the 30 th November each year
1.4.	Decision of the Faculty Council of the founding of the Center	Decision and Regulations adopted to	Dean; Vice-dean for science; Head of the Research	Center fully operational - June 2016

	Regulations about the Center's operation Appointment of the Head of Center. Number of researches involved in Center's operation. Number of applied/approved projects of the Center	set up Center's operation; First report of involved researchers and of applied projects.	and Development Office; Head of the Administration Office	
1.5.	Number of visiting guest researchers per year Number of professors of the Faculty of Agriculture (PFOS) doing research/ specialization at other universities	Comparison with the previous period	Vice-dean for science; Vice-dean for international relations; Head of the Research and Development Office; Head of the International Relations Office	Report issued by the 30 th November each year
1.6.	Number of young researchers admitted to work on projects Number of associate professors in relation to the total number of scientific and research staff	Comparison with the previous period	Vice-dean for science; Head of the Research and Development Office	Report issued by the 30 th November each year
1.7.	Elaboration of the criteria, of the conditions and the responsibilities for the foundation of the Research and Development Office – Rules and Regulations; Faculty Council Decision of the foundation of the Office; Employment of the office staff	Adopted decision of foundation of the Office; Rules and Regulations also adopted	Dean; Head of the Administration Office; Vice-dean for science; Vice-dean for international relations; Vice-dean for the Quality and Lifelong Education	January 31, 2015
1.8.	Creation of a scientific research equipment list	Completed list of equipment available on-line	Vice-dean for science; Head of the Research and Development Office	March 31, 2015

1.9.	Experimental Plot being a part of scientific research and educational endeavors	Documents of Ownership; Regulations about Experimental Plot's operation; Appointed Head of Experimental plot; First-year work-plan Agreement.	Dean; All four Vice-deans; Heads of Institutes; Head of Experimental Plots	January 31, 2017
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Strategic aim 2.

Improvement of the quality of postgraduate programs and of young scientists and researchers

Mission	Indicators	Monitoring mechanisms	Responsible persons	Implementation date
2.1.	Number of new supervising mentors at postgraduate (doctoral) programs per study year. The total number of supervising mentors in doctoral studies per study year	Comparison with the previous period	Vice-dean for science; Head of the Research and Development Office	Report issued by the 30 th November each year
	Reorganized doctoral studies	Revised program of the doctoral study; Permission of the University Senate	Vice-dean for science; Heads of the existing postgraduate courses	October 30, 2015
2.2.	Number of defended doctoral dissertations	Comparison with the previous period	Vice-dean for science; Head of the Research and Development Office	Report issued by the 30 th November each year
2.3.	Number of students enrolled into postgraduate (doctoral)	Comparison with the previous	Vice-dean for science; Head of Student's	Report issued by the 30 th November each

	programs	period	Administration Office	year
2.4.	Document about stimulating enrollment into postgraduate (doctoral) programs	Adopted plan of activities for attracting the best students to enroll into post-graduate (doctoral) programs	Vice-dean of Academic Affairs; Vice-dean for science; Vice-dean for Quality and Lifelong Education	January 31, 2015
2.5.	Number of doctoral researches made outside of the Faculty of Agriculture (PFOS)	Comparison with the previous period	Head of the Research and Development Office; Vice-dean for science; Vice-dean for international relations	Report issued by the 30 th November each year
2.6.	Quality of the teaching process, exercises and other activities at the doctoral studies	Comparison with the previous period along with the results of a survey made out by the finishing year of the doctoral study program (Results of teacher, mentor and co-mentor evaluation)	Head of the Research and Development Office; Vice-dean for science; Vice-dean for Quality and Lifelong Education; Head of the Committee for Assurance and Education Quality Improvement	Report issued every 3 years

Strategic aim 3

Intensification of scientific activities at the international level

Mission	Indicators	Monitoring mechanisms	Responsible persons	Implementation date
3.1.	Faculty Council Decision about the foundation of the Office. Rules and	Decision about Regulations	Dean; Vice-dean for international relations; Head	January 31, 2015

	Regulations about the Office operations Employment of Office staff	adopted; Regulations; Staff employed	of the Administration Office	
3.2.	Creation of funds and securing of assets for listed activities	Decision about creation of the funds and criteria for the assignment of financial means	Dean; Vice-dean for international relations	October 31, 2014
3.3.	Rules and Regulations concerning rewards	Adopted Regulations	Vice-dean for international relations; Head of the Administration Office	December 15, 2014
3.4.	Number of workshops and lectures held about Horizon 2020 - the Framework Program for Research and Innovation Number of applicants / approved Horizon 2020 projects	Comparison with the previous period	Vice-dean for international relations; Head of the International Relations Office	Report issued by the 30 th November each year
3.5.	Number of modules of the doctoral study that are conducted in English language. Number of international PhD students, post-docs and researchers	Comparison with the previous period	Vice-dean for international relations; Vice-dean for science; Head of the International Relations Office; Head of the Research and Development Office	Report issued by the 30 th November each year